

AUTOMOTIVE INDUSTRIES

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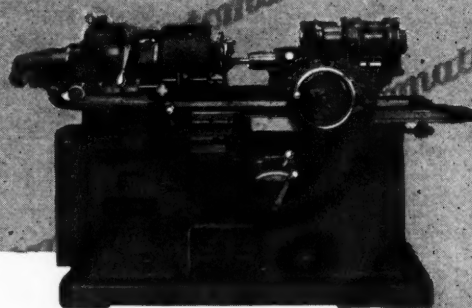
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AUTOMOTIVE INDUSTRIES

VOLUME 59

Philadelphia, Saturday, September 8, 1928

NUMBER 10

Truck Business *Gain* is Indicated by Heavy July Output

Signs point to better times for this branch of industry during last half of year. Best markets have been in agricultural States. Ford loss is heavy.

By John C. Gourlie

THE truck business, which has been something of a laggard in this year of automotive prosperity, is at length swinging into line with other elements of the industry, if certain auspicious indications are to be taken at full face value.

Instead of showing the normal seasonal decline in July, output of commercial vehicles in that month registered a 25 per cent increase over the June total and went 57 per cent above the figure for the corresponding month a year ago. The July aggregate of truck and bus production was 53,048 units, a new record for the month, and one that has seldom been bettered in any month.

Furthermore, in July, for the first time this year, commercial vehicle production went above the computed normal, based on the secular trend established in recent years and adjusted for seasonal variations. Since the normal expectancy for July was 46,000 vehicles, the actual output was 19 per cent higher, as shown in the accompanying chart. Not since early last year has the curve of production ranged above the trend line.

There is a small degree of danger, however, in accepting the July increase in production as of particular significance. As a matter of fact the gain that month was largely due to a spurt by a single important producer who had in the previous month been operating at a rather slow rate and doubtless had considerable accumulation of orders.

AS a result of the sharp upswing in July, production of commercial vehicles for the first seven months of the year was brought very close to the figure for the corresponding period of 1927. The year, in fact, for the period covered, was only about 4 per cent under the level of last year, a rather gratifying condition when the tremendous loss sustained by Ford is considered.

Nevertheless, there was an unmistakably good demand for commercial vehicles from the field in July and the fact that it influenced one company disproportionately is not a sign that the trend will not continue above normal. The market is currently active and it is confidently expected that

sales figures for the summer months, not yet available, will show major gains over last year's level.

For the first half year, domestic sales were 20.4 per cent under the corresponding period of 1927, against a production decline of only 12.2 per cent. This can be charged with reasonable accuracy to two factors; first, that exports were relatively much better than domestic sales, and second, that Ford's early production was for the purpose of supplying branches and dealers with display and demonstration jobs.

There is a possible third factor in the disparity between production and sales rates—that stocks in the field have increased as compared with a year ago. It is, of course, hardly probable that manufacturers have been shipping more vehicles to branches, distributors and dealers than the market would justify, but it must not be overlooked that there are more truck dealers in existence this year than last, and the new dealers are usually obliged to take chassis for display that do not appear in the sales figures.

In several instances important truck manufacturing companies which have been mainly reliant upon

branches for sales have recently adopted the policy of signing dealers in centers where branches are not considered economic, and those companies already committed to dealer policies in general have been in active search for additional outlets. Finally, two passenger car companies have added truck lines this year, although the actual volume of business done so far can have had little effect on the averages.

It is unlikely, on the whole, that the number of truck dealers added this year would be sufficient to absorb any considerable part of the production of the first six months.

Agricultural Markets Best

Survey of the sales figures by States does not bring out any trends of outstanding significance. Declines in the first six months were shown by all but 10 of the States, but it is perhaps noteworthy that all but one of the 10—Ohio—showing gains are primarily agricultural States.

The South Atlantic and Gulf States, with the exception of Texas and North Carolina have been comparatively poor markets. The effects of the flood are partly responsible in some of these States, whereas in others perhaps a predilection for Fords has been the main deterrent.

Somewhat varied conditions are shown also as among the producing companies. In sales in the first half year, out of 20 manufacturers surveyed 11 had losses and nine had gains. The losing companies included both small and large, but numerically, of course, the 78 per cent decline in Ford sales was far more important than the losses of all the rest.

The fact that losses outnumbered gains in the non-Ford group, despite the gain for the group as a whole,

is a sign of the highly competitive state of the market. Keen merchandising and good service were never of greater importance in the truck industry.

Thus analysis of sales pretty clearly shows that there is nothing fundamentally ailing with the truck industry, despite a tendency toward the contrary belief among some of the less well-informed sections of the press and public.

Briefly, the record shows that in the first seven months of the year, the Ford loss as against last year was approximately 65,000 vehicles. Of this deficit the non-Ford production in the lowest tonnage ranges made up only 35,000. In other words and figures, non-Ford output of trucks from ½ to 2 tons was about 227,000 for seven months against, roughly, 192,000 in the corresponding period a year ago.

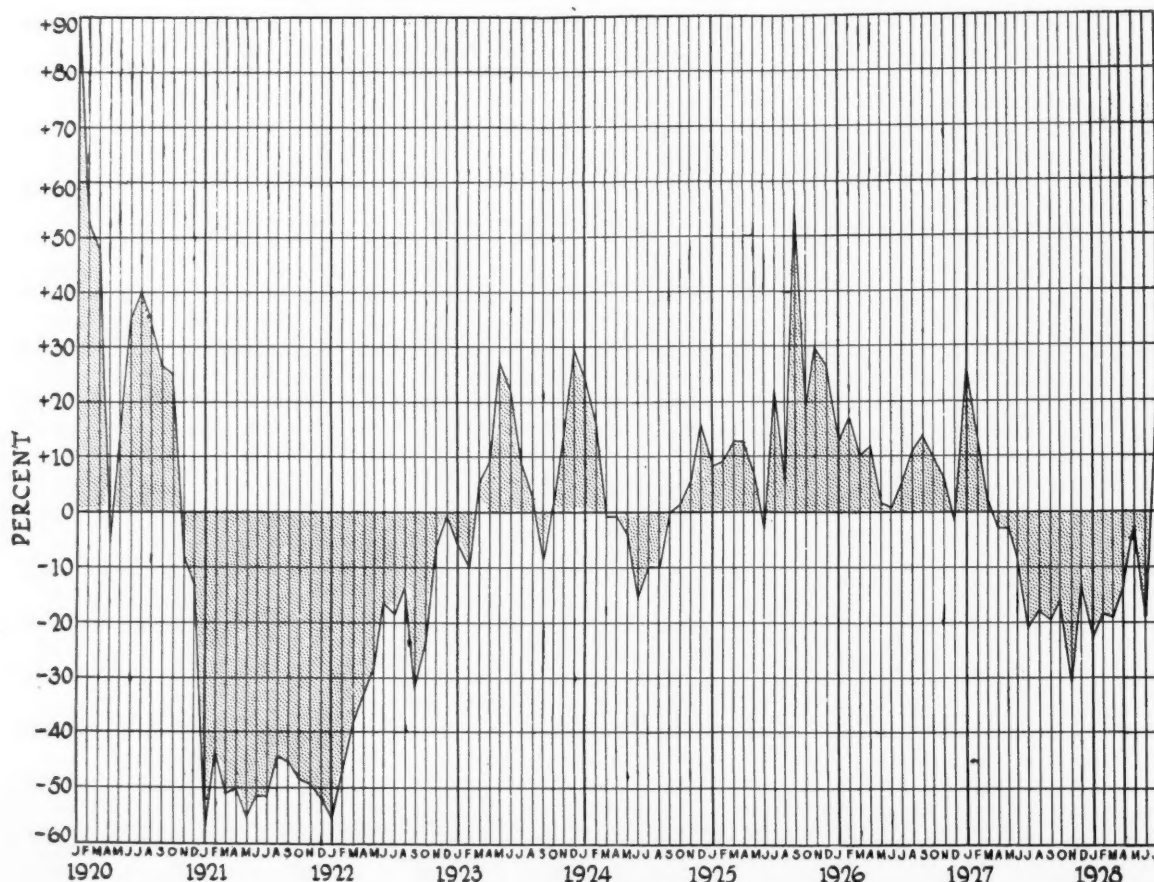
It is fairly plain that, taking the industry in its entirety, the only loss suffered this year has been in the very light class, which has been generally supposed to be gaining the fastest in the esteem of operators. A grouping just above, of production in the 2 to 3½ ton range, shows a gain this year of 10,000 vehicles, or from about 21,000 to 31,000.

The percentage gain in this group was 50 per cent, whereas the percentage loss in the less than 2-ton group, including Ford, was 10 per cent. Above 3½ tons, the conditions this year as compared with last are virtually on a par.

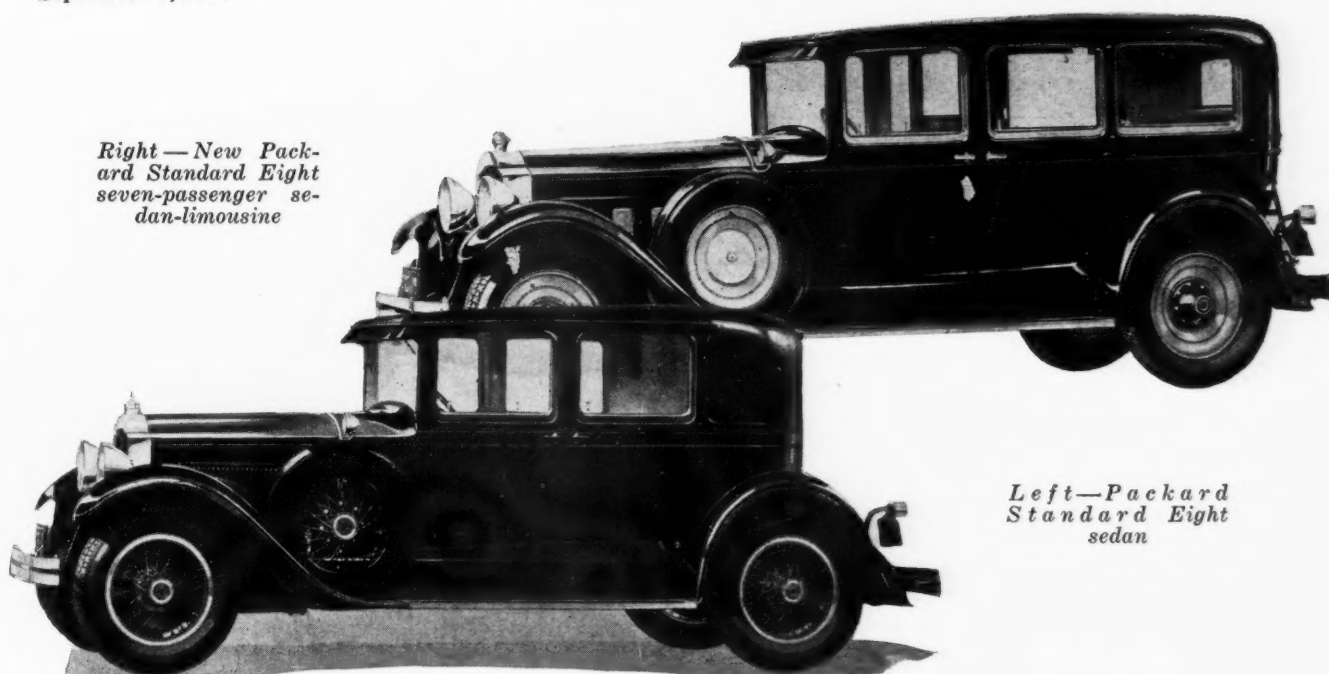
Evidently if there is a trend against the extremely heavy vehicles it is not to be demonstrated this year, which, in a minor way, has even brought about an upswing in demand.

Buses are having a considerably better year than in 1927, seven months production having been about 3200 against 2800 a year ago.

Truck Production Curves Showing Deviations From Normal



Right — New Packard Standard Eight seven-passenger sedan-limousine



Left — Packard Standard Eight sedan

Packard Drops Six-Cylinder Model, Brings Out New *Eight*

Car is offered in 10 body styles on 126 and 133-in. wheelbases at prices ranging from \$2,435 to \$2,835. Engine has 320 cu. in. displacement. Bodies refined.

By A. F. Denham

EARLY in July the Packard Motor Car Co. reduced its prices on the six-cylinder line and frankly stated that this was due to pending introduction of a new model. This car has now materialized and is being announced to the public this week. It is a straight eight priced at from \$2,435 to \$2,835 in 10 body models, with an engine very much along the same lines as the large eight but designed to fit into the space occupied by the six-cylinder engine.

This move is in accordance with the Packard practice of making only minor and gradual appearance changes from year to year so as to obviate the high obsolescence which would otherwise be incurred. Body lines as a result remain virtually unchanged, although a number of refinements contribute toward enhancing the appearance.

These body changes, as well as the number of refinements and developments in the chassis and engine, have also been carried out in the larger eight-cylinder model. The complete Packard line now consists of the new Standard Eight, on 126 and 133-in. wheelbases, the Packard Custom Eight on a 140-in. wheelbase—2 in. shorter than last year—and reduced \$700 to \$900 in price, and the custom-built line of bodies on a 145-in. wheelbase, on which prices are not listed. Both of the latter take the larger eight-cylinder engine with its refinements.

Following are the prices of the new cars:

Standard Eight—126-in. W.B.			
Model	New Price	Six Cyl. Price	Weight Lb.
5-p. Sedan	\$2,435	\$2,285	4185
2-4-p. Coupe	2,510	2,350	4100
2-4-p. Conv. Coupe	2,585	2,425	4020
Standard Eight—133-in. W.B.			
2-4-p. Runabout	\$2,535	\$2,385	3905
5-p. Phaeton	2,535	2,385	3905
7-p. Touring	2,635	2,485	3950
4-p. Coupe	2,735	2,685	4225
5-p. Club Sedan	2,735	2,685	4240
7-p. Sedan	2,735	2,685	4440
7-p. Sedan Limousine	2,835	2,785	4475
Packard Custom (640)—140-in. W.B.			
Model	New Price	Old Price	Reduction
2-4-p. Runabout	\$3,175	\$3,875	\$700
5-p. Phaeton	3,175	3,875	700
2-p. Coupe	3,250	4,150	900
7-p. Touring	3,275	3,975	700
2-4-p. Conv. Coupe	3,350	4,250	900
4-p. Coupe	3,750	4,450	700
5-p. Club Sedan	3,750	4,450	700
7-p. Sedan	3,750	4,450	700
Sedan Limousine	3,850	4,550	700

Outstanding on all the cars is the greatly increased comfort. This is due not only to a new design of seat cushions and backs, correctly supporting the backs of the occupants, but also to the improved roadability of the new models. The latter is due to a combination of two factors: The first is a double acting hydraulic shock absorber and the second a double shackling of

the left front spring to eliminate wheel fight and front wheel shimmy. Taking the latter first, the underslung spring, which as formerly is shackled at the front end, has been attached at the rear to a bracket, trunnion-mounted on the bottom of the frame side channel. Between bracket and frame flange are four coil compression springs which limit the travel of the rear shackle and act in the form of shock absorber for the steering gear. Instead of a sudden road shock being directly transmitted to the steering gear, the fore and aft motion of the left front spring with the new method of shackling absorbs the shock.

Rotating Vane Type

The new Packard double-acting hydraulic shock absorbers are of the rotating vane type, the vane forcing oil from either side of it, depending on the direction of rotation, through a graduated metering device equipped with a ball check valve in such a manner that the correct amounts of restriction for both compression and rebound strokes are obtained. A departure from conventional practice is also found in the method of shock absorber mounting. Instead of being attached to the frame, with link arms to the axles, both front and rear axles have integrally forged brackets for the mounting of these units, the link arms being connected to the frame.

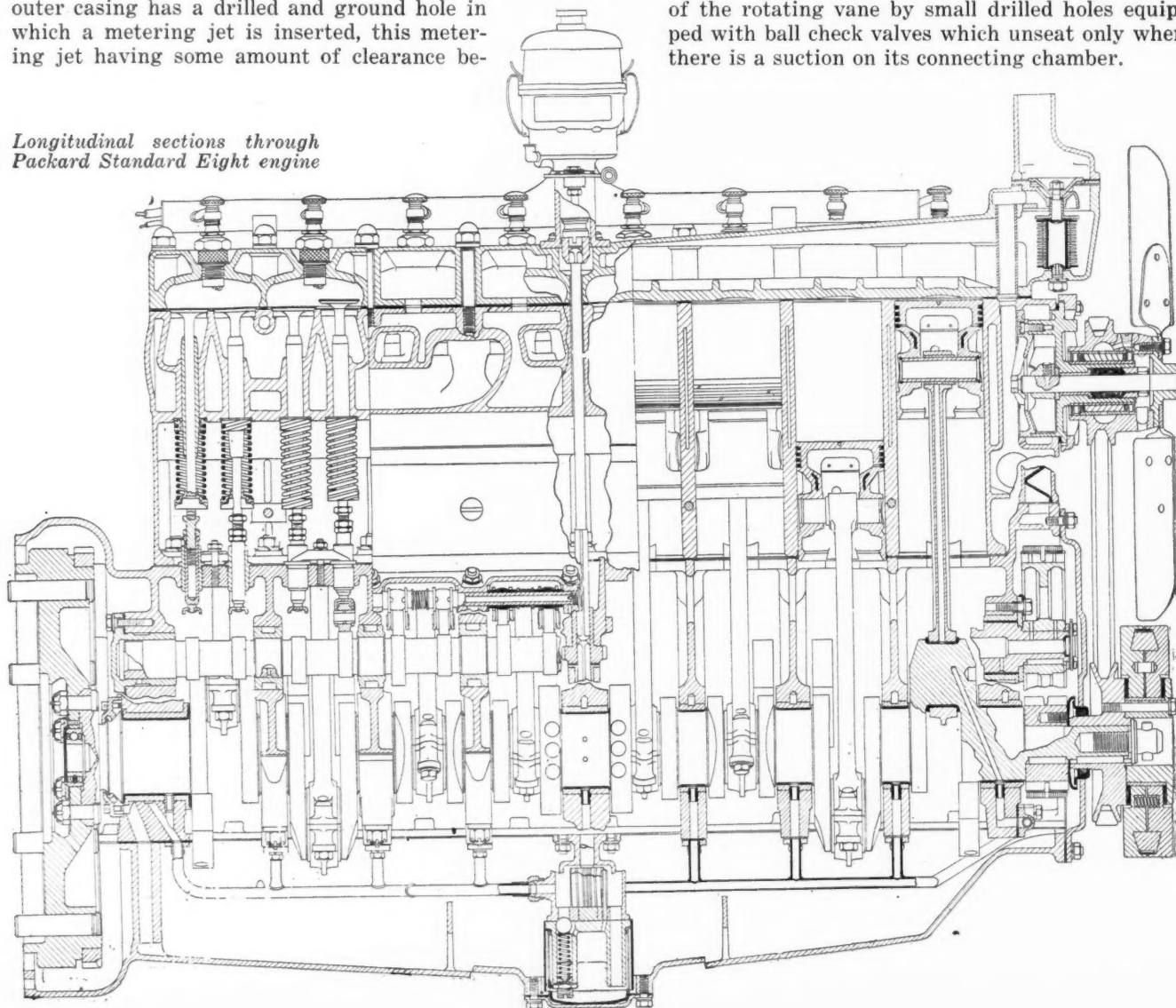
In design the hydraulic unit is quite simple. The outer casing has a drilled and ground hole in which a metering jet is inserted, this metering jet having some amount of clearance be-

tween it and the wall. Inside of the metering pin is a drilled passage fitted with a ball check valve. On the spring compression stroke the oil passes both around the metering jet and through the small drilled passages in the jet. On the rebound stroke where more resistance is desired, the oil traveling in the opposite direction seats the ball check valve and has to pass around the outside of the jet, increased restriction being thus provided. Since the satisfactory operation of the unit depends practically entirely on the correct clearances for this jet, which is quickly replaceable, final factory adjustments, if necessary, can be quickly made. No provision is made, however, for service adjustment of these units, the latter being considered unnecessary and highly undesirable by factory engineers in view of the difficulty of synchronizing the action of all four shock absorbers in service adjustment.

As to oil leakage, there is a double seal in the units. The back plate of the unit, which is under pressure, is electrically welded to the main case to eliminate chance of oil leakage at this point. At the arm packing gland there is another safety feature. In addition to the large gland there is a drain hole immediately back of the gland which carries any oil which might reach this point back into a supply chamber.

The function of this supply chamber is to refill the operating parts of the unit. It is not under pressure and is connected to the two chambers on either side of the rotating vane by small drilled holes equipped with ball check valves which unseat only when there is a suction on its connecting chamber.

*Longitudinal sections through
Packard Standard Eight engine*



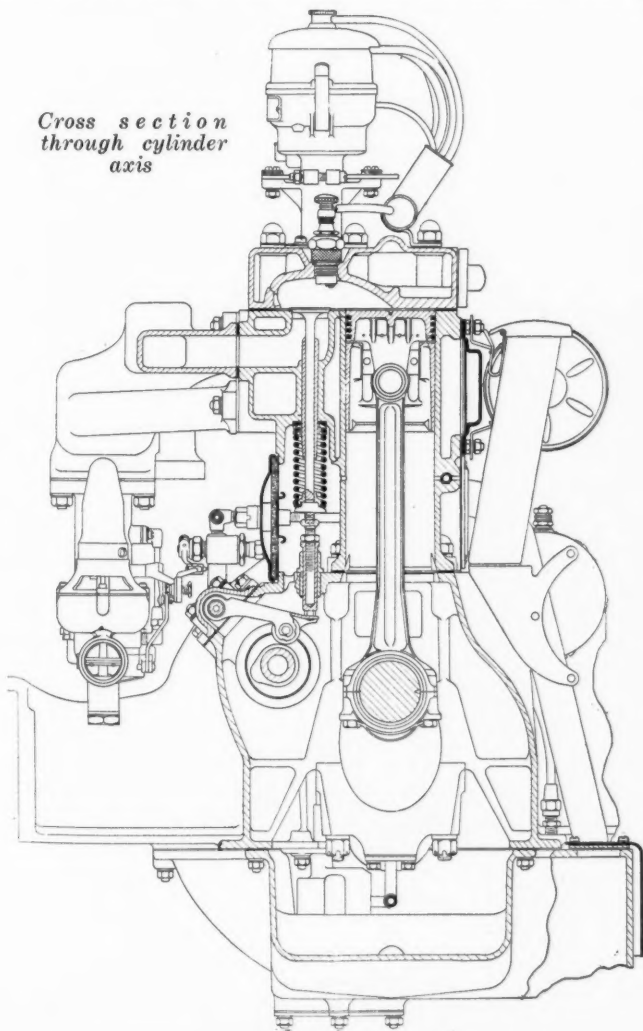
With the adoption of these shock absorbers and the double shackled left front spring a number of other changes have been made. The rate action of all springs has been reduced to give a softer ride. The rear springs have also been slightly altered in shape to lower the rear end by about $\frac{3}{4}$ in. and on the 145-in. wheelbase chassis they have been lengthened 6 in. The balance lugs on the wheels have been eliminated, as they no longer seem to be necessary. In the steering gear also two ball bearings have been provided, one on either side of the steering sector, to eliminate danger of binding of the gear. The width of gear face sector has also been increased.

Engine is Shortened

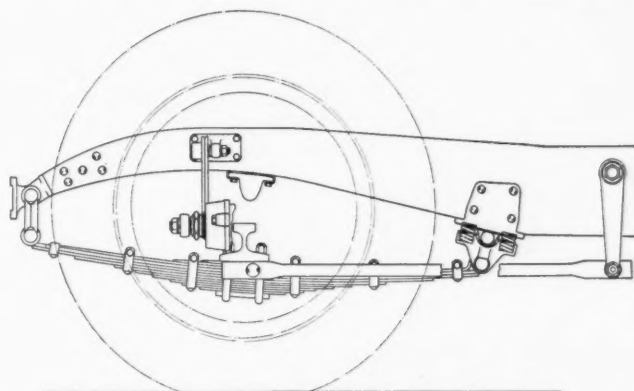
Since the new Standard Eight does not differ in design from the larger eight, the engine being merely a shortened edition of the same to make it fit into the six-cylinder chassis, a summary of the design improvements in the larger eight, which are also found in the smaller engine and chassis, will indicate quickly to those acquainted with Packard design just what the new cars are like mechanically. The Standard Eight has a bore of $3\frac{3}{16}$ and a stroke of 5 in., giving it a piston displacement of 320 cu. in., and a rating of 32.5 hp. while it actually develops around 90 hp. on the dynamometer. In addition to shortening the block, the water pump and fan mounting have been redesigned to bring the fan closer to the block, these changes enabling the substitution for the former six-cylinder motor with but a slight moving back of the dash.

There are several new features in the engines. Among

Cross section
through cylinder
axis



these is the crankcase ventilating system with its series of holes between the crankcase and the valve lifter housing. The rotation of the crankshaft forces the air up through these holes. From the valve lifter housing the air and fumes pass through a passage between the front and rear cylinder banks, and down through a pipe



Packard shock absorbing as applied to front axle and steering

on the opposite side to below the engine pan, where the air suction, due to the motion of the car, assists the exhausting action. Built into this exhaust pipe mounting bracket is a dial type of oil level gage, directly above the drain plug in the crankcase.

Among the minor engine changes are a redesigning of connecting rod lower end bosses to keep the babbitt from cracking; piston skirts have been stiffened at the bottom, the use of die-cast aluminum bearing caps in place of the sand cast caps with their steel reinforcing plates, and an improved torsional vibration damper. The latter has a lead-impregnated trapezoidally-shaped rubber ring between the plates, so designed that the flow of the lead and rubber outward at higher engine speeds increases the pressure between the disks and thus gives increased damping action at the higher harmonic periods.

Electrical System

In the electrical system, North-East distributors have been adopted. The distributor shaft has also been changed to a two-piece assembly to provide better universal joint action and thus decrease noise at this point. Other changes in the electrical system include the provision of a larger 15-plate storage battery on the Standard Eight, the elimination of all junction boxes and conduits in favor of an armored and rubber-covered cable system and the replacing of the circuit breaker by a fuse and ballast coil.

The crankshaft of the Standard Eight engine is of the counter-balanced nine-bearing type with $2\frac{5}{8}$ in. main bearing and $2\frac{3}{16}$ in. diameter crankpin journals, the latter being $1\frac{7}{32}$ in. long. Connecting rods are interchangeable with the larger eight, and pistons and pins are identical except for the smaller bore. Inlet and exhaust valves have head diameters of $1\frac{21}{32}$ and $1\frac{15}{32}$ in. respectively, inlet being of chrome nickel, and exhaust of silicon chrome steel. Both have stem diameters of 0.3405 in. and are set with a tappet clearance of 0.004 in. hot.

Front end drive chains are interchangeable with the larger eight, a Morse No. 645 chain being used.

In addition to the full pressure lubricating system, the external oil manifold operated coincidentally with the choke, adopted last year, is also found on the Standard Eight.

It is also interesting to note that Packard with its 1929 models has dropped the rubber insulated engine mounting, returning to a rigid four-point suspension. Aside from the changes already mentioned in the cooling system, the inlet and exhaust ports have been changed somewhat so as to permit increased water passage sizes around the exhaust valves. The radiator core on the Standard Eight also has a finer mesh than the former six-cylinder model and water capacity is increased somewhat with the larger displacement. The fuel system, except for the use of a slightly larger, 1 13/16 in. diameter carburetor on the Standard Eight, remains unchanged.

Changes in Exhaust System

Several changes have also been made in the exhaust system. The muffler, which is of the concentric tube type, is of stamped steel and covered with asbestos. It is bolted directly to a frame cross-member, thus eliminating the usual mounting bracket at the front end.

In the clutch another important change is found. The spring-controlled vibration-damping mechanism developed by the Long Mfg. Co. has been adopted in the Long clutch to prevent synchronization of engine and transmission vibration. Since the transmission is slightly further back in both the Standard Eight and the shortened 140-in. larger eight, the shift lever was moved from the top of the transmission case to the plate on the bell housing. As a result there is even more room in the front compartment than formerly. The change naturally involved extending the shifter shafts forward into the bell housing.

Some minor changes have been made in connection with the brakes. These now have 16-in. drums on all models, the former sizes having been 13 5/8 in. on the six and 15 5/8 in. on the eight. Stock thickness of the drum has been increased from 0.145 to 0.203 in., and the backing plate is also of heavier, 13/64 in., stock. This same stiffening and reinforcing is carried out in the brake linkage with a stiffening of the cross-shaft ends to reduce deflection, etc.

Reinforcements are also found in the frame. First of all the rigid engine mounting should assist. Then the front intermediate cross-member, which has been moved back slightly to clear the new transmission location, has been widened from 4 to 6 1/4 in. The flanges of this cross-member have also been made deeper and a saddle has been bolted to the center to form a box section. In the chassis lubrication system, the pipe lines have been extended to include the shock absorber ball joints.

Shorter Wheelbase

In addition to these various changes, the Model 640 now has a 2-in. shorter, 140-in. wheelbase. Wheelbase of the largest model is now 145-in., representing a 2-in. increase in length. In addition to lengthening the frame of this model, the rear end has been shaped so as to enable the use of a deeper rear cushion and to provide a support for the trunk rack. It has a double curvature and in this model a rear deck splasher covers the entire assembly, including spring horns, to give a neat appearance. The hood on this model is very similar to that of the 140-in. cars except that it is 1 1/2 in. higher at the front and 2 in. wider at the dash, the latter also having been widened.

As already mentioned, body changes are relatively minor in character. Probably the most important change is the improved frontal appearance, with its narrower, chromium-plated radiator shell, full-length,

built-in thermostatically-operated radiator shutters and a false V-shaped bottom for the core. For the first time also a departure has been made from Packard practice by placing a coat-of-arms on the front of the radiator shell. A further change in the radiator assembly is found in the removal of the engine thermometer to the dash and its replacement by a decorative filler cap. In addition to the shell, all exterior hardware formerly nickel plated is now finished in chromium, including the new bullet-shaped headlamps, bumpers, hood latches, etc.

In addition to the new seat contours other interior changes include the adoption of remote control lever type door handles, with built-in door locks put into effect by shoving the operating lever forward. Door and window garnish moldings are genuine walnut. New smoking and vanity sets of the concealed type with cigar lighter in the smoking set are standard equipment. In the sedan-limousine the partitioning glass is crank-operated and of the fully disappearing type.

On the 140-in. models chrome-plated cowl lamps and bands are standard equipment as are also spring covers and an extra wheel. Six wheels and tires are furnished with the 145-in. wheelbase custom models.

Fender wells and trunk rack are available on all models, as are demountable wire or wood wheels, disk being standard on all. Cowl lamps and bands and spring covers are listed as at extra cost on the Standard Eight.

Very little change in structural design has been made in the body models. The most important is found in the four-passenger coupe on the 133-in. wheelbase chassis which was formerly of all-metal construction and is now of composite design.

RECORDS of the research work carried on at the Bureau of Standards will hereafter be published in a monthly journal known as the *Bureau of Standards Journal of Research*, the first copy of which, bearing the date of July, has come to hand. This new publication supersedes and continues the two series of research publications heretofore issued by the bureau under the designations "Scientific Papers of the Bureau of Standards" and "Technologic Papers of the Bureau of Standards." The new journal will print the results of all researches conducted by the bureau, of both theoretical and experimental nature, and it is expected that each number will carry an average of 200 pages of material (magazine size). The subscription will be \$2.75 per year. Shortly after each month's journal is published reprints of the separate articles contained may be purchased from the Superintendent of Documents.

The initial issue contains one article of automotive interest, viz.: "Measurement of the Tread Movement of Pneumatic Tires" and a "Discussion of the Probable Relation to Tread Wear," by W. L. Holt and C. M. Cook.

MOTORCYCLES in France increased by nearly 100,000 last year, reaching the record total of 232,000. French manufacturers, many of them assembling with British engines and other components, got the major portion of this business. The only imports were from Great Britain. This rapid growth in the use of the motorcycle caused a drop for the first time in the number of pedal cycles, which showed a total of 6,583,728 compared with 7,112,818 for the previous year. There is reason to believe that the saturation point of bicycles has been reached, but that motorcycles will continue to increase.

Dodge Senior Six Has New Body Lines, Increased Power

Higher engine output obtained by increase in compression ratio and improved manifolding. New type clutch plate adopted. Wheelbase lengthened. Prices are higher.

THE new Senior line, just announced by Dodge Bros., Inc., includes six body types with new body lines, a more pronounced appearance of lowness, increased wheelbase and interior roominess, greater power and a number of other changes and refinements in bodies, engines and chassis.

The announcement of this new line, with the recently announced improvements in the Victory Six and the evident, but still officially unannounced, improvements in the Standard models, indicates that rumors to the effect that the consolidation of Dodge Brothers with Chrysler Corp. would result in discontinuing some of the Dodge lines have been unauthorized.

In the accompanying table are given prices of the new line which, in those models where direct comparison is possible, are slightly higher than previously.

Model	New Price	Old Price	Increase
2-door Victoria brougham.....	\$1,575	New Model	New Model
5-p. Sedan	1,675	\$1,595	\$85
2-4-p. Coupe	1,675	New Model	New Model
5-p. Sport sedan	1,795	1,775	20
2-4-p. Sport coupe	1,795	1,725	70
5-p. Landau sedan	1,845	New Model	New Model

The new Victoria brougham is a five-passenger, two-door model with adjustable driver's seat. It is supplied with wood wheels, as are the sedan and

coupe. The latter has a crank-operated rear window for communication with the rear compartment. Sport sedans and coupes are furnished with six wire wheels and six tires, with spares carried in fender wells. Both types are also fitted with trunk racks.

The landau sedan, another model in the line, has a fabric rear top quarter, with conventional landau irons. It is also fitted with six wire wheels and tires, fender wells and trunk rack. The rear seat of this model has a disappearing, folding type armrest for use when only two passengers occupy the rear seat.

Brake Lever at Left

Other features of the new body models include grab handles on the backs of the front seats of the five-passenger models, in addition to those on the side of the rear compartment. Sedan doors are fitted with pockets in panel inserts. To the dash is attached a fabric composition panel for noise and heat insulation from the engine compartment. The emergency brake lever is at the left of the driver and curved forward to prevent it from obstructing the movement of the driver's left foot. Sport models have leather inserts in the front compartment carpet at points where wear is normally the greatest, as under the heels back of the pedals, around the controls, etc.

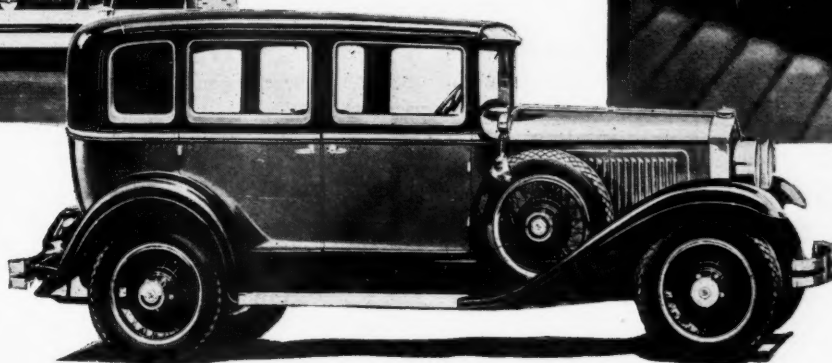


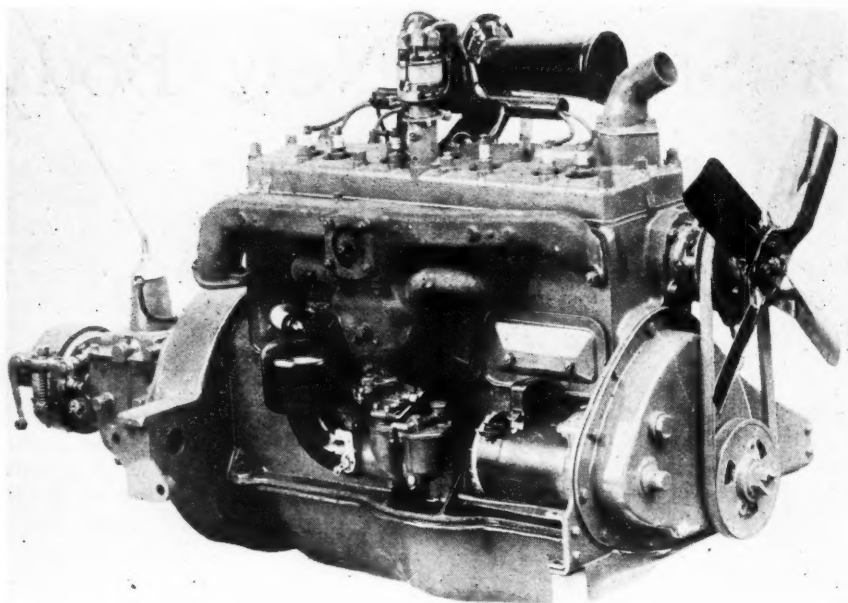
Left—The front of the new Senior Six with the curved radiator design is shown in this view of the brougham



Above — Driver's compartment of the Dodge Senior Six, showing arrangement of controls

Right—Senior Six sport sedan with spare wheels and tires carried in fender wells





New Dodge Senior powerplant with improved manifolding, increased compression and other refinements

A walnut steering wheel is employed. The windshield is of the swinging type with internally mounted vacuum wiper fitted with hand control. The coupe and sedan models have dome lights, the latter also having rear quarter lights in the sport editions.

Externally the lines are radically different from those of the former models. The radiator shell has a slight peak at the top, and the entire front is covered by a false bottom and thermostatically-operated radiator shutters, the latter extending all the way to the top of the core. An easy-on flush type filler cap with central ribbing finishes off the shell, the rib lining up with the piano type hood hinge.

All exterior bright metal hardware is chrome plated, including bumpers, radiator shell, lamp rims, cowl trim molding, outside door handles, and spare wheel clamps on the sport models. General body lines follow closely what might be called the 1929 motif of body design.

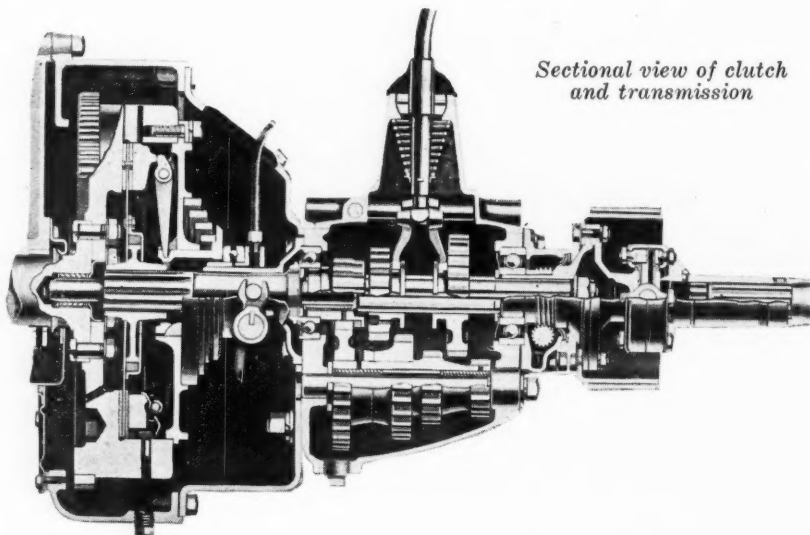
Mechanically, the most marked change is in the increased power of the new cars. This has been obtained by an increase in compression ratio from 5.26 to 5.55 to 1 and through improved manifolding. The new inlet manifold is Y shaped with a very large radius joining the short vertical riser and horizontal portions. The outer radius extends in a V form down into the riser. The manifold is of a two-port type, with the porting so arranged that all inlet valves are equidistant from the carburetor with resultant good distribution.

Another feature of the manifolding is the new design intake heater valve. The exhaust manifold proper does not jacket the inlet manifold, but the latter has a jacket which bolts to the bottom of the exhaust manifold. The butterfly valve is located in the bottom of the exhaust manifold in such a manner that in the completely off position all gases pass directly out through the exhaust pipe without passing around the inlet manifold. With the butterfly fully open, all ex-

haust from the three front cylinders has to pass through the jacket. This alone should provide rapid heating, but in addition fins are cast on the inlet riser inside the jacket. A Stromberg UX-3 carburetor is used.

In the lubricating system is a crankcase ventilator exhausting through the rear valve housing cover plate, and provided with an off-and-on control.

A new type of clutch plate has been adopted in the Senior. As formerly it is of Borg & Beck manufacture, and 11 in. in diameter. Between the triangular hub and rim a square section rubber strip is mounted in compression to cushion the drive. Another feature of the plate is the rim design adopted for obtaining smooth engagement. The rim is split into 12 segments and



Sectional view of clutch and transmission

alternate segments are offset in opposite directions from the center plane of the disk. The molded asbestos composition facings are annular in shape, but riveted only to alternate segments. In this manner only half the segments engage initially on either side when the clutch pedal is released.

Gearshift Lever Lengthened

In the transmission the only change of importance is the lengthening of the gearshift lever which now extends to within 4 in. of the steering wheel rim. The steering gear ratio has been increased to 16 to 1 for easier handling and ball bearings are located above the steering knuckles. The frame has been stiffened by changing the front channel member under the radiator to a box form giving greater front end torsional rigidity. The rear frame cross-member, which is in the form of a wide plate, has been widened for additional stiffening. Including the four-point rigid engine supports there are seven cross-members in this 120-in. wheelbase frame. The side members have also been lengthened together with the increased wheelbase.

In addition to the accessories already mentioned there are a fuel gage and engine thermometer mounted with the usual instruments on the frosted

silver instrument panel, illuminated by a hooded lamp. A cigar lighter is also provided and is of the removable "pass-around" type mounted on the steering column bracket. Lovejoy shock absorbers are

standard, ball and socket links being used on the front units and straps on the rear. The tool equipment includes a strap wrench for the removal of the large round hub caps.

Lead Oleate Suggested for Anti-Detonating Fuel

SOME notes on recent Continental work on anti-detonating fuels are given in an article in the Italian journal *Gionnale de Chimi Industrielle ed Applicata* by R. Ariano which is abstracted in *Engineering*.

Prof. G. Ferreri of the First Research Department has suggested the use of metallic naphthenates, and also directed attention to lead oleate. The use of this latter seems to have been first proposed in Russia. It was used in the Paris-Tokio flight, and Erlich has recommended that tests with this compound should be undertaken by a large firm of French automobile manufacturers near Issy-les-Molineaux, suggesting that fuel efficiency would be very largely increased thereby. This substance has the advantages of being easily prepared and also perfectly safe. The chief objection is the relatively high percentage (about 1 per cent.) of oleate which must be present in the fuel. If widely used in populous districts, this would probably mean the contamination of the atmosphere with an appreciable amount of lead compounds in an extremely fine state of subdivision, although the risk of this may be exaggerated.

Metal Base is Important

An interesting point in connection with lead or iron, or indeed with any metallic compound, is that the radicle itself may be relatively unimportant, and that it is the metal base which is of importance, due probably to a magnetic or electrical effect. It is necessary that the compound should be readily soluble in benzol, and preferably be non-poisonous. Lead ethide, of course, is one of the most deadly poisons known.

Ferreri, as previously intimated, has carried out experiments at the Fiat works in Turin, during the past two or three years, with metallic naphthenates, which are easily soluble in benzol. In the refining of Russian petroleum with sulphuric acid and caustic soda, the alkaline lyes, on stand, separate into three layers of which the upper and lightest is mineral oil, whilst the other two form not very sharply demarcated layers of soap paste and sodium-sulphate solution. The soap is a mixture of sodium naphthenates from which the free naphthenic acids may be easily obtained by treatment with sulphuric acid.

These acids are the so-called natural naphthenic acids, which are isomeric but not identical with the naphthenic or hexahydrobenzoic acids obtained, by reduction with metallic sodium, from benzoic acid and its homologues in amylic or caprylic alcohol solution. These compounds have been studied by numerous investigators, such as Charitschkoff, Pyhala, Chercheffsky, and Gurwitsch in Russia, and by Tanaka, Nagai and others in Japan, using Japanese mineral oils.

Professor Ferreri thinks that hitherto they have only been used locally in Russia and Japan, but they have certainly been examined in England for various purposes, although doubtless on a small scale. The naphthenates of lead and manganese are useful as varnish driers; copper and other naphthenates are employed in the manufacture of gutta-percha, wood pre-

servatives and paints; chromium and iron naphthenates may be employed as mordants in dyeing; and many of them are made into low-grade soaps.

In Germany the Dye Trust has carried out elaborate research on motor fuels and considerable publicity has been given to its anti-detonant iron carbonyl used in Motalin, but little has appeared so far about another fuel known as Gasin. It is now claimed that while other fuels and detonators have been evolved on quite empirical grounds, the manufacture of Gasin is based on strict scientific principles and on a true hypothesis of detonation. This hypothesis supposes that the primary factor in detonation is electrical non-conductivity; the higher the conductivity of a fuel the less is the liability to detonation.

Gasin was tested for electrical conductivity by means of two suitably placed platinum electrodes insulated from the walls of the engine; a battery of dry cells was placed in circuit, together with a switch, two resistances in parallel or in series, and a very sensitive galvanometer. Various fuel mixtures were then tried:—

- (1) Benzine only; non-conductive, violent knocking.
- (2) 50 per cent benzine, 50 per cent benzol; slightly conductive, less knocking.
- (3) 30 per cent benzine, 70 per cent benzol; highly conductive, no knock.
- (4) Gasin, highly conductive, no knock.

Gasin was also tried in various road tests, in comparison with other fuels, such as stellin and Dapoline, and found to be superior to both, giving higher power at high and low speeds, with less consumption of fuel. The quiet running of the engine was particularly noticeable.

It seems highly probable that, in accordance with the views recently expressed by Church, Mack and Boord in the United States, the organo-metallic compounds break down in the cylinder and produce a cloud of very finely divided and easily oxidizable metallic dust, which in some way ensures a more uniform burning of the gas mixture at the right moment without detonation. That electrical conductivity may play an important part here is perfectly feasible, as Ferreri of the Fiat works has previously suggested.

A NEW multiple plating process which is said to give unusual protection against corrosive influences is mentioned in an article in *Der Motorwagen* by Dr. Rudolf Carl. It has been developed by the Langbein-Pfannhauser Works in Leipzig and is known as the Antirostan process. The ferrous articles to be protected are first given a thin layer of nickel in the electrolytic bath. This is followed by a layer of cadmium, which in turn is followed by a heavier layer of nickel, and if desired a layer of chromium can be applied on top of this. The rust protection of this plating process is said to be much greater than that of a layer of nickel on top of a layer of copper or brass.

Foreign *Instalment* Sales Program Requires Careful *Planning*

Many important legal phases to be considered by automotive manufacturers in extending time-payment privileges abroad. Laws are different from those here.

By L. O. Bergh
Marvin & Bergh, New York

THE instalment sale is an integral part of the automotive industry. With the great expansion in our foreign markets, our automotive manufacturers are confronted with the problem of arranging instalment sales programs that not only will be best adapted to actual market conditions, but also will have the most effective legal safeguards, according to the laws of the foreign country selected.

The instalment sale, expressed legally, is a conditional sale in which the ownership is reserved in the seller until final payment has been made. In many countries the conditional sale is not recognized at all, and in other countries, only to a limited extent. However, it is possible in practically all countries to get at least a reasonable amount of protection by using the proper legal forms and procedure. It is, of course, not merely a question of general legal principles, as they may be expressed in foreign civil or commercial codes, because the general principles expressed in the codes may have been modified by decisions of the courts, and also there are always many points of practice which do not appear even in codes or court decisions.

Realizing the extensive and complex nature of the problem, we undertook two years ago, on behalf of certain manufacturers engaged in selling extensively abroad on the instalment plan to revise the rough contracts and procedure which they had tentatively been using, and to construct for them plans which would give the greatest possible legal protection in the countries where they were dealing, in accordance with the latest decisions and the most up-to-date practice. Although the court decisions were in the main available in our library to the foreign attorneys in our foreign department, it was deemed desirable

to make a comprehensive survey with the assistance of our legal colleagues abroad, not only in the countries in which our clients were interested, but in all of the countries that are of importance as American export markets. Letters explaining the survey and the points of interest to us and our clients were sent to these colleagues, and along with the letters, questionnaires, so as to make the inquiries as explicit as possible, and to assist the colleagues in making up their replies. The importance of the survey was appreciated by our associates, who responded by sending in very complete reports. The result has been the building up of a repository of complete information on legal, and also on some of the very practical matters related to conditional sales abroad.

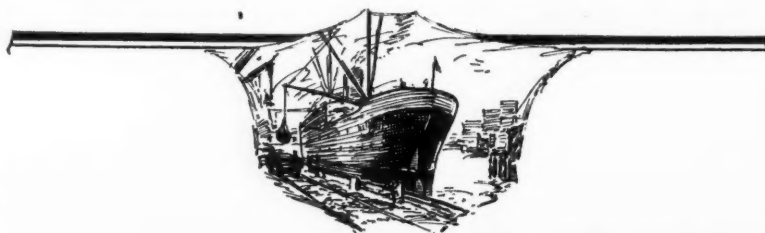
In view of the great diversities of foreign laws, and the limited scope of this article, it is necessary to treat the subject in a rather general fashion. The difficulties of condensation are so great that I may be pardoned perhaps if I rely to some extent on the treatment of the subject which I used in an address in April of this year before the National Foreign Trade Convention.

In actual operation, a conditional sales program may involve both the wholesale and retail aspects.

The law as to both is practically the same in theory, but in practice may work out very differently. For example, take the important question of reclamation. It is one thing to reclaim motor cars or motor trucks from a distributor who has kept them in his warehouse or in his showroom: the vehicle will be new, or virtually new. On the other hand, if they are reclaimed from purchasers who have been riding around in them, they will, of course, have suffered a very serious depreciation in selling value. Besides,

UNTIL the countries which constitute our chief export markets either follow the good example set by Peru, or adopt some other measures which are equally efficacious, our automotive manufacturers should exercise the greatest care when planning their foreign instalment sales programs.

"They should be sure to see that their arrangements accord with the special principles of law prevailing in the countries where they are selling, and to use appropriately drawn forms of agreements, mortgages, or other title retention instruments."



in proceeding against a distributor, there would be only a single legal proceeding that will apply to a number of cars and the expense per car will be comparatively small. But if proceedings are taken against the actual purchasers, each proceeding will be separate and will be as expensive, or nearly so, as the proceeding against the distributor.

Reclamation may be preferable, practically, to a proceeding to collect unpaid balances where the collection, even though successful, would be exceedingly protracted and correspondingly expensive. Again, reclamation may be used so as to effect a resale and to reduce the amount of the unpaid balance for which the purchaser would still remain liable. But in the main, reclamation will be resorted to as a means of salvage when the purchaser has become formally bankrupt, or at least practically insolvent. Considering all of these possible uses of the right of reclamation, it must be borne in mind that in practice the question of reclamation may arise either as against a purchaser who has a contractual relationship with the manufacturer, either direct or by assignment, or as against a purchaser who has no such contractual relationship, i.e., the so-called innocent third party who purchases for value.

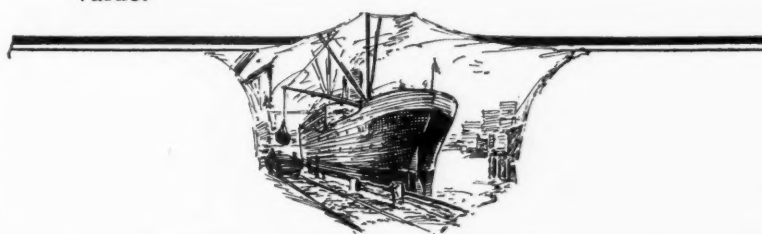
Leaving it to Distributor

Some export plans permit the distributor to sell the cars on the instalment plan to purchasers approved by him, and the distributor turns over the contracts and promissory notes, or other negotiable instruments obtained from the purchasers, to the manufacturer along with his own indorsement. In other words, the manufacturer obtains the double liability of the distributor and the purchaser. At first glance, this may seem to afford adequate protection, but when analyzed, it will appear that the chief reliance here is the distributor's own responsibility, because the expense of proceeding against individual purchasers in foreign countries would, on a per car basis, be rather heavy; and such cars if reclaimed would not have a very high resale value. Practically speaking, it is a much better plan, from the standpoint of protection, to rely entirely on the distributor and to make him pay as he goes. In other words, under this plan, the cars ordered by the distributor are shipped upon his advancing part of the price, and on arrival they are either kept in a warehouse and delivered to the distributor as paid for, or they may even be delivered to him so that he can keep them in his warehouse or on his floor, but under a legal arrangement which retains title in the manufacturer. This plan can, of course, be liberalized, depending upon the credit worth of the distributor and the manufacturer's needs for sales expansion.

Let us see now the extent to which title can be re-

IN actual operation, a conditional sales program may involve both the wholesale and retail aspects. The law as to both is practically the same in theory, but in practice may work out very differently. For example, take the important question of reclamation.

"It is one thing to reclaim motor cars or trucks from a distributor who has kept them in his warehouse or in his showroom. The vehicles will be new or virtually new. On the other hand, if they are reclaimed from purchasers who have been riding around in them, they will, of course, have suffered a very serious depreciation in selling value."



tained in the chief of our foreign markets. As a basis of comparison, we think of the conditional sales law that we have in most of our States. As applied in most of the States it works out well in practice. It provides for the registration of the conditional sales agreement, and such registration being constructive notice to all parties, protects the manufacturer not only against creditors, but even against innocent purchasers.

But this type of law, generally speaking, is not found in the civil law coun-

tries; in fact, these countries, with some few exceptions, do not recognize conditional sales. On the contrary, their theory is that the sale is perfected at the time of the agreement between the parties, and that the ownership then is transferred from the seller to the buyer, and this regardless of any agreed condition for the withholding of title. What then are the substitutes for the conditional sale which may be available in these countries?

The chattel mortgage comes to mind, but the mortgage on movable property, with the exception of Denmark, is not recognized in the Continental countries. The theory is this: If I own an automobile and give another party a secret lien or claim against the automobile, there is the danger that third parties might be misled, and such an arrangement would be an open invitation to fraud. Of course, in this country we guard against the fraud danger by requiring the chattel mortgage to be registered, but the civil law countries do not, generally speaking, provide for such registration.

Agrarian Pledge

In Latin-America the same reasoning is followed. However, the economic necessity for securing funds for agricultural development in some of the Latin-American countries has forced them to adopt what is, according to their law, a juristic anomaly, namely, the so-called agrarian pledge. This is the same thing as our chattel mortgage, only in most of the countries where used, it is confined to agricultural implements and machinery and crop loads. However, in Costa Rica the law, although designed primarily for agrarian pledges, is very broad and covers loans on all movables. In Argentina the law does not appear to be so broad, but it permits the agrarian pledge to be applied to articles required for national industry, and the Court of Appeals of the Commerce Court of Buenos Aires in December last applied this to ordinary sales of automobiles. Consequently, the agrarian pledge can now be utilized in Argentina as a substitute for conditional sales.

The trust receipt, which, unfortunately, has been used rather blindly in foreign trade, has been suggested as a substitute for the conditional sale. The

suggestion is valueless, and, in fact, dangerous. This form of instrument should not be used in civil law countries, because the civil law does not recognize the trust relation as we do. One exception to this statement is Panama, which has recently made a statutory adoption of the trust theory. But speaking generally, the stipulated reservation of title in the trust receipt is meaningless in civil law countries, and in these countries it does not prevent the immediate passing of title.

Hire-Purchase Plan

Then we have the so-called hire-purchase, or lease with option of purchase. This form of contract is used rather extensively in Latin-America and in Europe. It is, of course, just a mask for a conditional sale; consequently, the courts sometimes will tear the mask away and say, "This is only a simulated sale and we will treat the transaction as such, and not as one of hiring." If the court took this position in a case where the lessee had become bankrupt, the car or cars would be treated as having been sold outright to the lessee and would become part of the bankrupt estate for distribution to the general creditors. However, in Chile, Colombia, Venezuela, Guatemala and Honduras the hire-purchase agreement has been used rather extensively and has not been overthrown by any court decisions. On the continent, Belgium and Holland are using the hire-purchase form; Denmark uses it for sales up to 3000 kroner, and Norway for sales up to 6000 kroner.

The hire-purchase agreement, while adapted for sales to the ultimate user, is rather awkward for transactions with a distributor because the consumer uses the article, whereas the distributor simply keeps it on hand for sale. Consequently, in Latin-American countries it will usually be preferable to use what may be called the "deposito" agreement. Very briefly, this provides:

That certain described articles are left with the distributor as a depositary for exhibition in his shop.

That the depositary undertakes to pay all expenses of maintaining and constituting the deposito, including freight, marine insurance, customs, etc.

That the manufacturer gives the depositary an option of purchasing the goods at certain prices, and that in consideration for the option, the depositary pays a certain amount, which is not to be refunded if the depositary fails to exercise the option, but is to be credited against the sales price if the option is exercised.

That if the depositary exercises his option, which is restricted to a short fixed period after the arrival of the shipping documents, he will make a written statement to this effect and accept drafts for the balance.

It will be observed that the requirement that a payment be made as consideration for the option is the hub of the whole thing, because this forces the distributor to exercise the option or forfeit the advance payment.

In a few countries the ordinary conditional sale may be used. Porto Rico has adopted our conditional sales law and, by providing for registration, gives full protection against third parties and creditors. Switzerland has a somewhat different procedure, but through its registration provision gives the same protection. In Brazil conditional sales have been approved by the courts, and the Supreme Court in Cuba in 1925 and again in 1926 rendered similar decisions,

but in both of these countries conditional sales will not be effective against innocent purchasers unless the sales have been recorded in the commercial register, and as this requires the drawing up of a notarial document, the procedure would be too expensive for ordinary commercial practice.

Peru has taken the lead for all the Latin-American countries, if we exclude our own Porto Rico, and a few months ago passed an instalment sales law which has virtually the same procedure and gives the same protection as our own type of statute. It is rather curious that Peru should have taken this forward legal step, because some years ago when Peru deviated from the theory which forbids mortgages on movables by legalizing mortgages on vessels, the authors of the act salved their sense of juristic punctilio by defining mortgages on ships as mortgages on real property.

Summing up the law as related to Latin-America, the only countries where full protection can be obtained against innocent purchasers are Porto Rico, Peru, Cuba and Brazil. But in the last two countries, the cost would ordinarily be prohibitive, because of the heavy expense of recording. In all of the other countries, protection could be had against creditors either by the hire-purchase agreement, or by the "deposito" agreement. As to Europe, the only country where complete protection is to be had against innocent purchasers is Switzerland. But in all the other countries, the manufacturer may be protected in the event of bankruptcy.

Turning now to the English countries: Canada is all right because there you have effective conditional sales laws providing for registration like our own. But England and the other English countries do not have such statutes. In those countries a serious legal obstacle is the so-called "order and distribution" clause of the Bankruptcy Act. This provides that the property of the bankrupt to be divided among his creditors shall comprise all the goods which, at the commencement of the bankruptcy, were in the possession, or subject to the order or distribution of the bankrupt in his trade or business with the consent of the true owner and under such circumstances as to indicate that the bankrupt was the real owner. This has been interpreted to apply to conditional sales. However, in England they make an exception and do not apply the clause where the bankrupt is a limited company. This clause will nullify a trust receipt where there is an agreement that the importer must purchase the goods.

Registered Bill of Sale

The only legal method of avoiding this order and distribution clause of the Bankruptcy Act in most of the English jurisdictions is by having a registered bill of sale, which corresponds to our chattel mortgage, but first-class distributors often will object to the publicity attendant upon registration as adversely affecting their credit reputation. An alternative method is for the exporter to keep legal possession in the foreign city of the goods ordered, delivering them to the importer as paid for, and obtaining a sufficient advance payment to virtually insure the importer's performance of the contract.

But until the countries which constitute our chief export markets either follow the good example set by Peru, or adopt some other measures which are equally efficacious, our automotive manufacturers should exercise the greatest care when planning their foreign instalment sales programs.

Just Among Ourselves

An Insurance Mess in Massachusetts

BIG doings in Massachusetts these days about compulsory liability insurance. After 20 months of operation under the new law, a rise in rates became necessary, in the opinion of Insurance Commissioner Monk, because the large number of fraudulent claims made and honored makes profit for the insurance companies impossible on the present basis so far as the Boston and surrounding districts are concerned. As a result of the increased rates put in by Mr. Monk, his resignation has been forced, the bar association of the State is investigating, the motorists are protesting and the whole situation, according to newspaper reports, is in a glorious muddle. We are too far from having complete facts at the moment to comment very specifically, but we're going to have those facts in a very few days. It would seem, however, as though an automobile-owning public would be unlikely to permit permanent existence of a condition where it is compelled to buy something at rates determined on what amounts to a cost plus basis. It has often been argued that compulsory insurance would carry with it necessity for the State to provide state insurance facilities; it is for that reason, among others, that the insurance companies have opposed compulsory insurance. The present Massachusetts mess would seem to indicate a reality of those fears, as there is certain to be a tremendous public opposition to rates raised in order to provide profits to private institutions.

Cure May Prove Worse than Disease

A FEW months after the Massachusetts law had

gone into effect and some of its proponents were claiming its complete success already proved, we urged careful watching of the situation over a period of several years, believing that only through some such protracted period could any real judgment of its fundamental workings be possible. The current furore would seem to indicate clearly that the case for compulsory insurance still is far from having been proved, by Massachusetts at least. Compulsory insurance today has a number of important—if not loudly vocal—supporters among automotive executives, but the watchful waiting attitude still maintained officially by the industry has much of very sound reasoning behind it. Despite certain obvious factors favorable to compulsory liability insurance, the question in the long run is somewhat the same as in the case of prohibition—is it possible for the cure to turn out worse than the disease? . . . But enough of comment here until we get together all the facts for you.

What the Plumbing Industry Needs

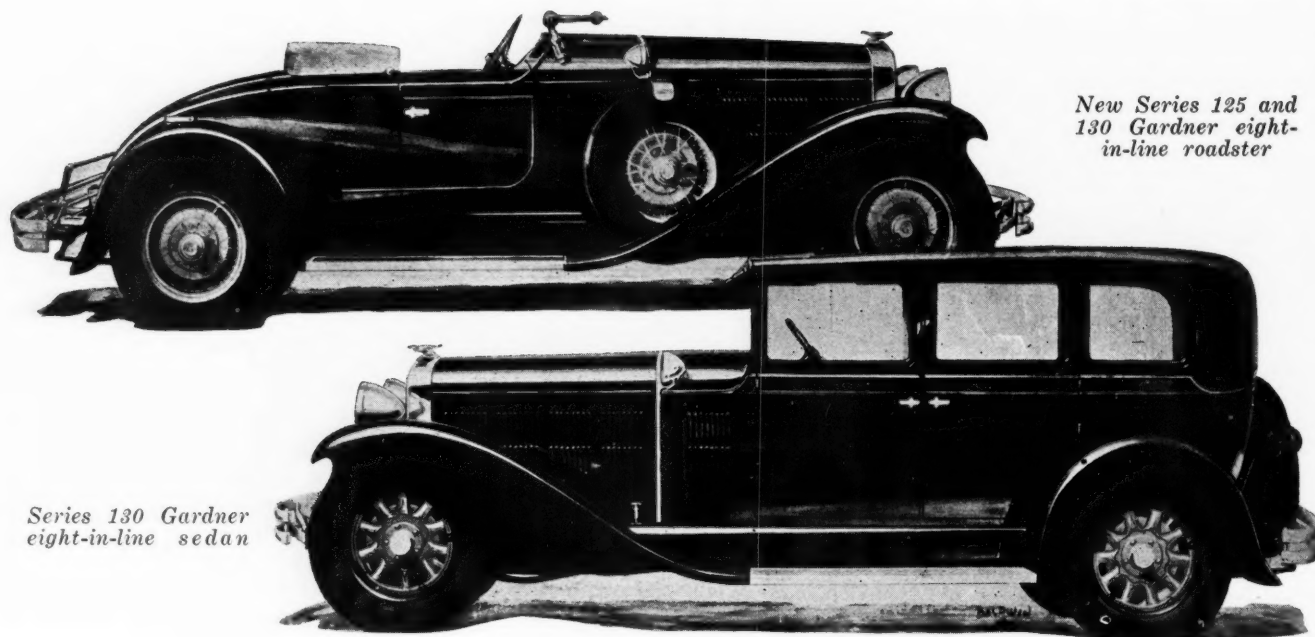
THE new competition continues to go on apace, bringing large industries into a struggle for larger share of the consumers' interest as well as of their dollars. While the automotive industry has not always fared well in this competition, it has in its annual automobile shows an asset possessed by few other industries and envied by all. Probably no other industry has shows which attract an equal amount of general public interest and discussion. Only a week or so ago, the Plumbing and Heating Industries Bureau ran a full page advertisement in the Sateve-

post trying to visualize how fine it would be if there could be an Annual Bathtub and Boiler show, with newspapers filled with stories about the coming new models, with heating engineers, copiously quoted, with sanitary experts expounding their views, with women gasping at the sheer new beauties of line in the new, wide variety of the newest plumbing fixtures. It visualizes men perusing specifications of the latest model boilers, excited partisans arguing the relative merits of porcelain tubs and of increased fire-travel boilers. This purely visionary dream child of the plumbing association copy writer serves to emphasize to automobile men the remarkable thing that they have in the national and sectional automobile shows and to renew appreciation of the unique romance, glamor and appeal which still surrounds that highly utilitarian product of the world's largest manufacturing industry—the automobile.

* * *

T. J. Little Finds Warm Weather

FIELD work for chief engineers often has been recommended as a means of getting these officials to have a better knowledge of how their designs operate. T. J. Little, Jr., who holds that position at Marmon, seems to be going that bit of advice one better—apparently he has been doing desert work. A post card from San Bernardino, Cal., tells us that we should have been with him over the Mohave desert where it was 110 degrees in the shade and indicates that we Philadelphians don't really know what hot weather is; with both ideas we feel bound to disagree even though we were delighted to get the post card.—N.G.S.



*New Series 125 and
130 Gardner eight-
in-line roadster*

*Series 130 Gardner
eight-in-line sedan*

Changes Are Made in Body Lines of Three Gardner Eights

Duplex carburetion is new feature of Model 125. Wheelbase of Model 120 is reduced. All exterior hardware now chrome plated. Price range is from \$1,295 to \$2,395.

WITH prices ranging from \$1,295 to \$2,395, Gardner enters the new selling season with three eight-cylinder cars known as the 120, 125 and 130 which supersede the previous 75, 85 and 95 models.

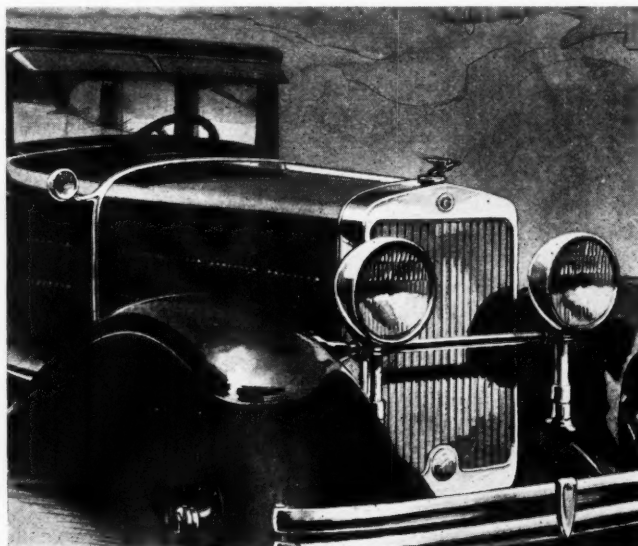
While no radical changes have been made on any of the chassis, the modifications include duplex carburetion on the 125, reduction of 2 in. in wheelbase on the 120 and improved body, hood and radiator lines, redesigned radiator emblem, chrome plating on exterior hardware, radiator shutters with vertical vanes, new headlights and more complete equipment on all lines. The complete line consists of 16 body styles and a choice of over 50 color combinations and 25 varieties of interior trim is offered.

Body lines of the entire series are long, low and rakish, giving the appearance of sturdiness and speed, which is further accentuated in the new radiator emblem of the Gardner griffin. Louvres

on the 125 and 130 series are now used on the cowl sides as well as on the hood. This treatment, formerly found only on the roadster and convertible coupe on the 95 chassis, adds greatly to the front end appearance and also provides means of ventilating the front compartment.

The lighting equipment on all models has been changed from drum type headlights to chrome-plated bullet-shaped lights and cowl lights with bands are found on the two larger eights.

Interiors of the 130 series are upholstered in mohair with whipcord, leather and broadcloth being optional. American walnut incases the windows and is used for the steering wheel and instrument panel. All the instruments are under one glass while the choke and ignition controls are conveniently placed on the left side of the board. In addition to the Fedco numbering system (which is used on the entire Gardner line) the car is further pro-



New Gardner model seen from the front

tected by making the ignition coil and switch in a single unit.

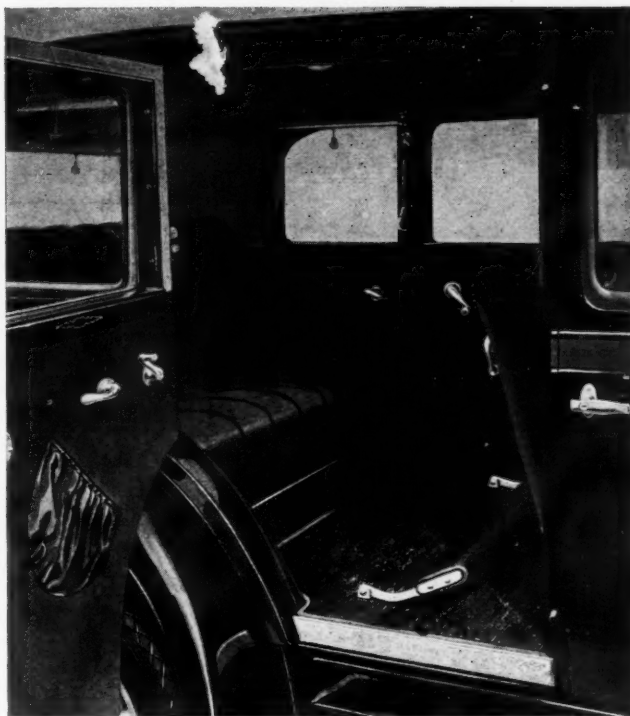
The 130 sedan is finished in dark blue with the upper body in black, the belt and window reveals being in deep blue. The black moldings are relieved with two fine lines of silver and the reveals are set off with a single silver stripe. The upholstery is in walnut mohair matching the interior trim and instrument board. The color scheme on the 130 brougham is in two-tone brown with grouse buff striping. Malaga maroon and black with gold striping form the color combinations on the new 130 coupe model which is of the straight seat type with rumble seat. Green upholstery harmonizes with the Bolling green exterior on the rumble seat roadster on the same chassis.

In appearance the 125 series is a smaller edition of the series 130. The upholstery is mohair and is available in a number of pleasing shades. The roadster of this series is offered with the same color combinations as the coupe on the larger chassis, while the coupe is finished in two tones of brown with Malaga maroon striping. Two tones of green with cream striping form the color combinations on brougham and the sedan is finished in the black above the Malaga maroon belt.

The exterior finish on the 120 models is also varied and in appearance this line is a counterpart of the two larger companion series. The sedan is done in browns, the sport sedan in blue and gray, the coupe in Bolling green and black with gold striping and the roadster in shades of brown and buff with Milori green striping edge with fine lines of grouse buff.

Standard equipment on the 125 and 130 series consists of bumpers front and rear, automatic windshield wiper, rear traffic signal, rear-view mirror, central chassis lubrication, air cleaner, oil cleaner, gasoline filter, engine thermostat, engine heat indicator on dash, and smoking set. The 125 series is fitted with Lovejoy shock absorbers, while the 130 models are equipped with Watson Stabilators and, in addition, an eight-day clock is provided.

The usual instruments are provided on the instrument panel of the 120 line which is also equipped with a rear traffic signal, gasoline filter, thermostat, rear-view mirror, automatic windshield wiper, Lovejoy shock absorbers on the front springs and engine



Interior of Gardner Series 130 sedan

heat indicator on the dash. In addition to the foregoing, the following special equipment is available for this series: Complete set of Lovejoy shock absorbers, bumpers, air cleaner, oil cleaner, central chassis lubrication and cowl lights with band.

Prices are as follows:

Series 120

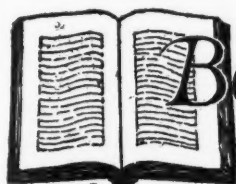
Sedan, \$1,595; cabriolet, \$1,495; roadster, \$1,395; sport sedan, \$1,295.

Series 125

Sedan, \$1,895; victoria, \$1,895; brougham, \$1,875; cabriolet, \$1,795; roadster, \$1,695.

Series 130

Sedan, \$2,395; victoria, \$2,395; brougham, \$2,375; cabriolet, \$2,295; roadster, \$2,195.



Books for the Business Bookshelf

Instalment Sales and Collections

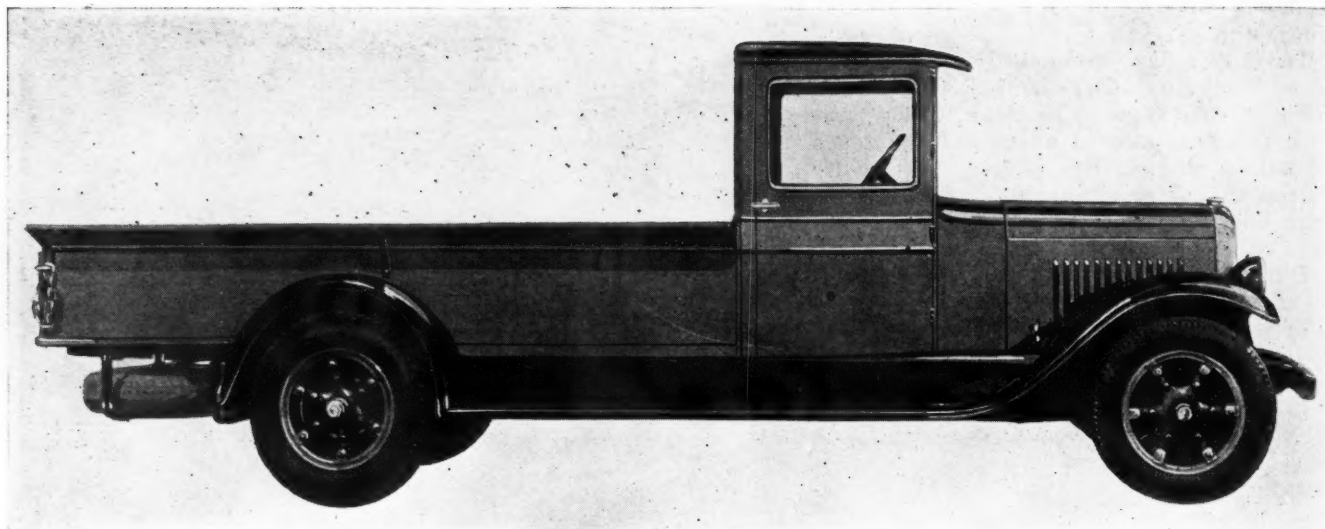
Bryant W. Griffin. Prentice-Hall, Inc., New York. 205 pp. \$4.

INSTALMENT selling is so widespread at the present time that it is, perhaps, strange that more has not been written about it in permanent form. The intricate problems involved in deferred payment sales are well indicated in the present volume and suggest that the solutions for all of them have not yet been found. Of particular interest to the automotive industry are several chapters which discuss in detail some of the difficulties encountered in automobile collection work. A number of the chapters have been contributed by various men expert in the particular subject they discuss.

How to Talk

John Mantle Clapp and Edwin A. Kane. The Ronald Press Co., New York. 647 pp. \$5.

THE sub-title is "Meeting the situations of personal and business life and of public address" and the authors carry through this expressed purpose in an admirable manner. The book is divided into six parts which deal with "Your personal problem," "Meeting the responsibilities of your calling," "Your social and professional relations," "Your private hours," "Public speaking," and "How you say it." In these sections the reader is led through nearly every possible occasion of speech and receives practical information about what to say and how to say it, and, of equal importance, when not to say anything.



Open body on the T-60, 3-ton G.M.C. Buick-engined truck

Buick-Engined *G. M. C.* Truck Line Expanded *and* Improved

New Chassis features include double disk clutch with thick driving plates to increase rate of heat flow, 4-speed transmissions, straight-line drive and Bendix brakes.

By A. F. Denham

AN improved and expanded line of G.M.C. trucks, ranging in capacity from 1½ to 4 tons and powered with the new Buick engines, is announced by the General Motors Truck Co. With the increase in power, due to change in the Buick engines for 1929 and the recent development of a 1-ton Pontiac-engined truck, the 1-ton Buick-engined truck has been redesigned to carry 1½ tons.

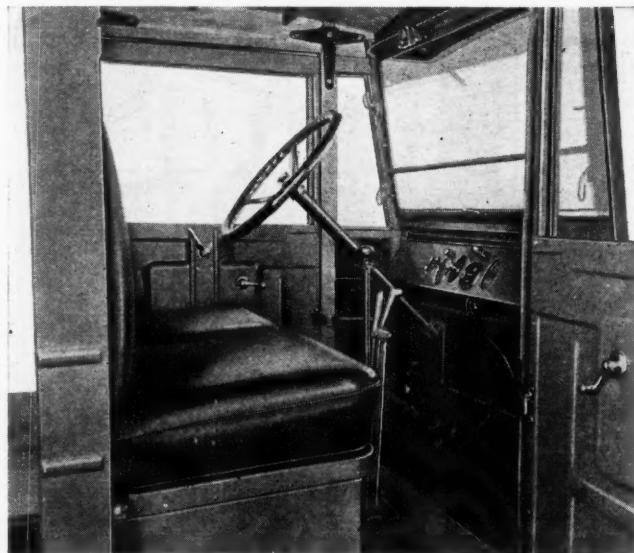
The various models with their capacities, lengths of wheelbase and prices are given in the following table:

Model	Capacity	Wheelbase	List Price
T-30 A	1½	136 in.	\$1,395
T-30 B	1½	152 in.	1,435
T-30 C	1½	164 in.	1,485
T-42 A	2	136 in.	1,685
T-42 B	2	152 in.	1,720
T-42 C	2	164 in.	1,735
T-42 D	2	175 in.	1,760

Model	Capacity	Wheelbase	List Price Solid Tires	List Price Pneumatic Tires
T-60 A	3	140 in.	\$2,585	\$2,800
T-60 B	3	160 in.	2,635	2,850
T-60 C	3	180 in.	2,650	2,865
T-60 D	3	200 in.	2,685	2,900
T-80 A	4	140 in.	2,765	3,160
T-80 B	4	160 in.	2,815	3,210
T-80 C	4	180 in.	2,830	3,225
T-80 D	4	200 in.	2,865	3,260

Similarity in design characterizes all four models. The T-30 and T-42 are equipped with the smaller Buick

engine of 3½ by 4½ in. bore and stroke. The larger engine, which has a bore of 35/16 in. and a stroke of 4⅞ in., is used in the T-60 and T-80. Both are governed by a suction-operated governor at 2500 r.p.m.,



Cabs are standardized on all four Buick-engined trucks. This view shows the attention given to driver comfort

at which speed they develop 72½ and 89 hp. respectively.

Important new chassis features include a double disk clutch with thick driving plates to increase the rate of heat flow, four-speed transmissions, a propeller shaft parking brake, four-wheel internal Bendix service brakes, a straight-line drive, self-adjusting tie-rods, a combination spring and rubber engine mounting and "fish belly" type frames. The 1½ and 2-ton models have spiral bevel drive rear axles similar to those used on the previous model T-40. On the T-60 and 80, a Timken worm drive axle is used. The latter models use a radius rod drive while the lighter jobs use Hotchkiss drives with double-wrapped spring eyes and an exceptionally heavy cross-member and mounting of the front shackle of the rear springs.

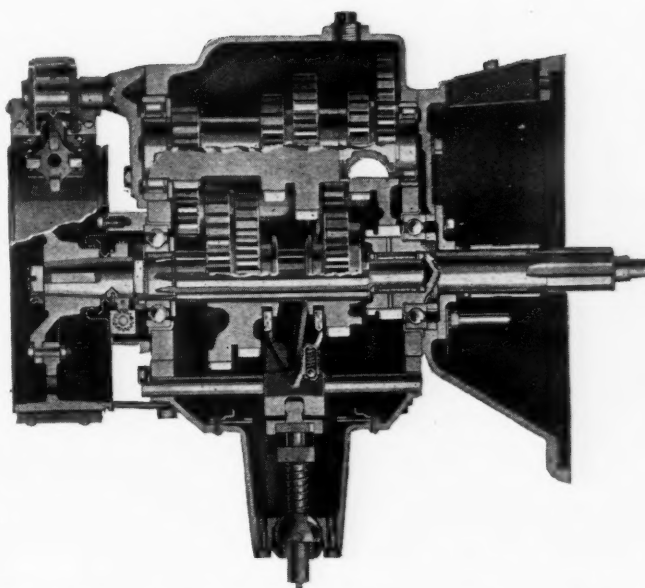
Engine Previously Described

The various changes in the Buick engines were described in the July 28 issue of *Automotive Industries*. Some of the features are steel-backed main bearings of larger diameter, higher valve lift, and AC fuel pump driven from the camshaft, a new Marvel three-jet carburetor, etc.

Protection against oil and fuel pollution is assured on all models by the provision of an oil filter, an air cleaner, a crankcase ventilator of the induced draft type, and a fuel strainer, the latter forming a unit with the fuel pump. Three-point engine mounting has been retained, but the front trunnion mounting is now so designed that the rubber disks take the downward forces while springs under the nut heads of the trunnion mount bolts take the upward forces, giving complete cushioning in both directions. The radiator also is mounted on cushioning rubber disks.

As a precaution against breakage of the oil gage pipe, a flexible metal clad hose of "Tite-Flex" manufacture is used.

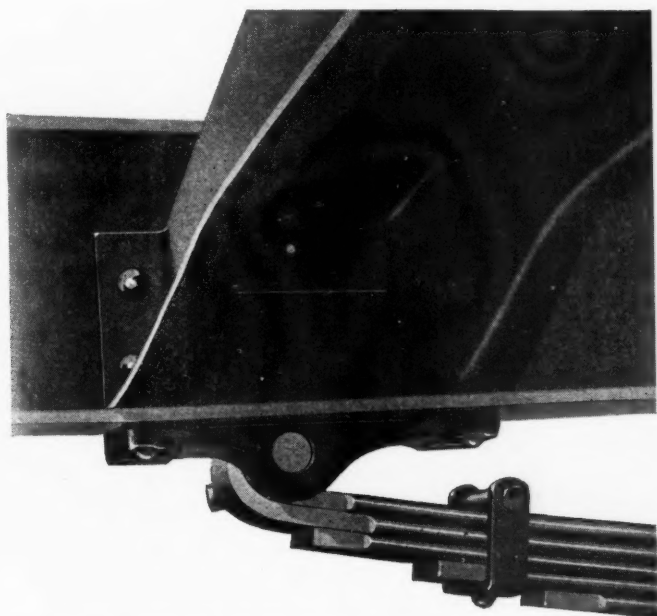
The new twin disk clutch developed for these trucks is characterized by unusually thick driving disks of which the central one is ¾ in. wide while the rear one has a width of 1½ in. Two facing disks of 4⅝ in.



Sectional view of the new four-speed transmission used in two sizes on the expanded line. Note use of anti-friction bearings

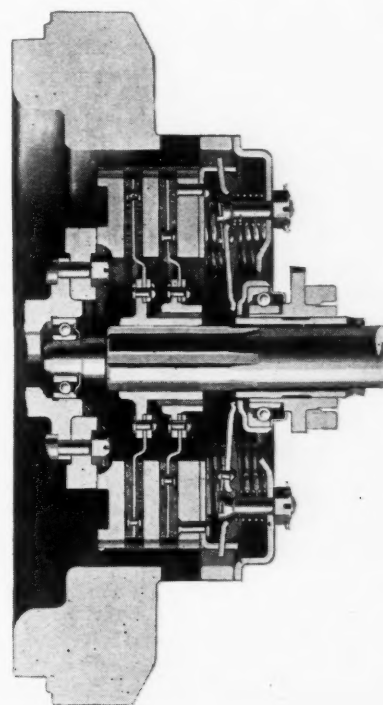
inside and 8½ in. outside diameter are riveted to each driven plate, the plates in turn being riveted to individual hubs. The total frictional area is 140 sq. in. and the maximum break-away torque is stated to be 637 lb.-ft. Another feature of the clutch is its ball-bearing pilot mounting. Thrust release bearings are also of the ball type.

As previously mentioned, four-speed transmissions are standard on all models. These are of the standard shift type with a latched-out position to the left and forward for the low speed. They are manufactured by Muncie Products and have 5 per cent nickel steel shafts, pack-hardened. The transmissions on the T-30 and T-42 are interchangeable, as are those on the T-60 and T-80, the two units being of similar design but heavier



On the T-30 and T-42, radius rod drive is no longer used. The Hotchkiss drive is featured by the heavy girder type cross-member shown, the double-wrapped spring eye and the 1-in. shackle pin

Sectional view of the new double disk clutch developed for G.M.C. trucks. Note heavy driving members and flexibility of driven plate rims

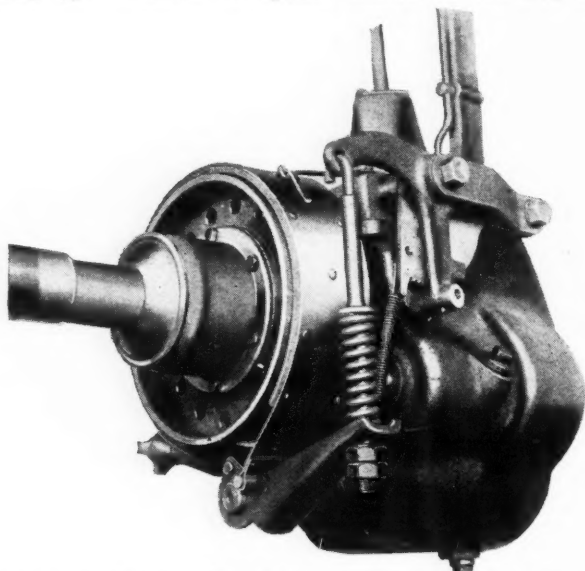


in the larger models. Both main and countershaft are mounted in anti-friction bearings. Reverse engagement is by shifting the reverse idler gear on its shaft. Gear reductions are as follows:

	T-30-42	T-60-80
First	5.08 to 1	6.18 to 1
Second	3.29 to 1	3.81 to 1
Third	1.76 to 1	1.78 to 1
High	Direct	Direct
Reverse	5.44 to 1	6.51 to 1

Auxiliary transmissions located amidship are available on the T-60 and T-80. These offer an additional reduction of 1.5 to 1.

Back of the transmission is located the propeller shaft parking brake which has a band 3 in. wide with a lining $\frac{1}{4}$ in. thick. Propeller shafts on the 1 $\frac{1}{2}$ and



This sturdy propeller shaft emergency brake is now standard on the Buick-engined truck line. It is 3 in. wide

2-ton models are of one-piece and on the 3 and 4-ton, of the two-piece construction, all using Spicer universal joints. In all jobs the maximum angularity at which the universal joints operate is said to be less than 5 $\frac{1}{2}$ deg. On the two-piece propeller shaft the center bearing is so designed as to take only radial loads, the thrust load being taken by the main transmission bearing. Front axles are heavier than formerly. Rear axles on the lighter models are similar to those used on the former Model T-40, 2-ton truck, while those on the T-60 and 80 are of the same general design as those used in the former Models K-54 and K-56 except for the new brake mountings, etc. Standard ratios are as follows:

Model	Standard Ratio	Optional Ratio
T-30.....	5.63	5.11 6.43
T-42.....	6.57	6.14 7.13
T-60.....	7.25	6.00 8.50 and 9.33 10.67
T-80.....	8.50	6.00 7.25 and 9.33 10.67

Brakes Three-Shoe Type

The four-wheel Bendix brakes used on all four models are all of similar design and of the three-shoe type. Brake drum and lining dimensions are as follows:

	T-30	T-42	T-60-80
Front drums diameter....	15 13/16 in.	15 13/16 in.	16 $\frac{1}{8}$ in.
Rear drums diameter....	16 $\frac{1}{8}$ in.	17 $\frac{1}{4}$ in.	17 $\frac{1}{8}$ in.
Front lining thickness....	$\frac{1}{4}$ in.	$\frac{1}{4}$ in.	$\frac{1}{4}$ in.
Rear lining thickness....	$\frac{1}{4}$ in.	$\frac{1}{4}$ in.	5/16 in.
Front lining width	2 in.	2 in.	2 $\frac{1}{2}$ in.
Rear lining width.....	2 $\frac{1}{2}$ in.	3 in.	4 in.

Frame design is very similar to that of the former models. Side channels are tapered both fore and aft with the following dimensions:

	T-30	T-42	T-60-80
Maximum depth	6	6 $\frac{1}{2}$	8
Flange width	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$
Thickness	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$

All frames are cold riveted. A feature worth mentioning is the extremely heavy girder-type arched cross-member at the center of the T-30 and 42 frames. This member is directly opposite the pin mounting for the front end of the rear springs, which latter now take the drive on these two models. On the larger trucks radius rods are used. A feature of the springs on the T-30 and 42 is the double-wrapping spring eyes at the front end. Spring dimensions are as follows:

	T-30-42	T-60-80
Front	38 x 2 $\frac{1}{2}$	40 x 3
Rear	50 x 3	54 x 3

Steering gears on all models are of the worm and split nut type with reductions of 15.2 to 1 for the T-30, 16.1 to 1 for the T-42, and 17 to 1 for the T-60 and 80. Tie-rods have spring loaded ball and socket ends for automatic adjustment to keep them tight at all times. Tire equipment on all models is as follows:

	Front	Rear
T-30.....	6.00/20 Balloon	34 x 7 Pneumatic
T-42.....	7.00/20 Balloon	36 x 8 Pneumatic
T-60.....	36 x 5 Solid or 36 x 8 Pneumatic	36 x 10 Solid or 34 x 7 Dual Pneumatic
T-80.....	36 x 5 Solid or 36 x 8 Pneumatic	36 x 12 Solid or 36 x 8 Dual Pneumatic

Standard wheel equipment is hollow spoke cast-steel with integral hub and 20-in. rims. Motor Wheel "Spoksteel" wheels, demountable at the hub for both 20-in. and 23-in. rims, both single and dual, are available at extra cost.

Registrations In England

FIGURES of motor vehicle registration in Great Britain for the fiscal year ending May 31, show that in 1928 there were refistered 832,171 passenger cars, as compared with 727,443 in 1927, an increase of 104,728, or 14.4 per cent. The number of commercial vehicles increased from 269,217 on May 31, 1927, to 288,987 on May 31, 1928, an increase of 7.3 per cent. Electrically-propelled vehicles decreased in number, from 1384 to 1365. Agricultural tractors increased in number by about 500, the number registered on May 31, last, being 14,755. Agricultural and general haulage tractors showed a large decline, from 4241 in 1927 to 3361 in 1928. Motor hackney vehicles showed a small increase, from 86,488 to 86,692. Exempt vehicles, which undoubtedly includes all vehicles owned by Government departments and municipalities, increased in the course of the year from 17,187 to 18,939.

Vehicles registered for the first time during the three-month period ending May 31, 1928, included 56,136 private passenger vehicles, 9424 goods vehicles, 619 farm tractors, 185 road tractors, 3695 hackney vehicles, and 927 exempt vehicles. The average annual license fees paid amounted to \$69 for passenger cars, \$138.40 for goods vehicles except electrics, in the case of which it is \$100, and \$246 for hackney vehicles.

THE Automobile Manufacturers Association of Italy has decided to hold its second international show in January next, if possible, in Rome. The decision was taken at a recent meeting in Turin.

States' Indebtedness for Highways Equals \$7.59 Per Capita

\$66,000,000 added to borrowings in past year, bringing total raised for roads and bridges to nearly a billion.

OF the total outstanding debts of the various states in 1928—nearly two billion dollars—45.7 per cent, or \$900,930,781.92, has been expended for the construction of highways and bridges, according to a recent survey of State bonded indebtedness made by the Bank of America.

More than two-thirds of the total debt, and probably even a larger share of the highway debt, has been in existence no longer than eight years, ample evidence of the greater responsibility the various states have taken upon themselves for the provision of improved means of transportation.

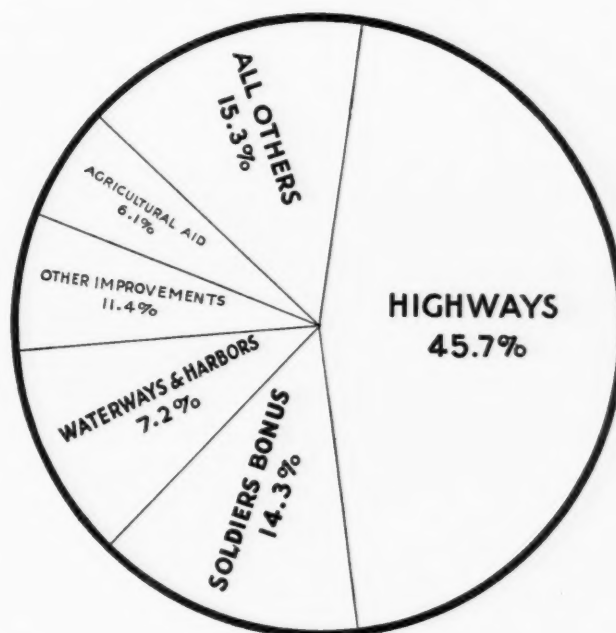
This huge highway debt does not, of course, represent all that has been spent on highways, since many bond issues have been refunded, much state work has been paid for by current receipts and municipal, county and Federal expenditures—the latter totaling some \$71,000,000 for 1928—have been very large in the aggregate.

Despite the imposing total spent on the good road movement by the various states, it represents a per capita expenditure of only \$7.59, which is little enough in consideration of the utility, comfort and convenience brought to all the citizens of the country through better highways.

Comparison of state debt figures for 1928 with those of 1927 show relatively minor changes. The debt for highways increased some \$66,000,000 and its relation to the total debt increased from 45.2 per cent to 45.7 per cent while the total debt increased about 125 million dollars to \$1,971,354,167.26.

As has been true for several years, New York still has the largest highway debt, although it was reduced slightly in 1928 to 107 million dollars. This represents a per capita expenditure of \$9.36, slightly above the country as a whole.

Next to New York follow in order of their indebt-



The Purposes of State Indebtedness

edness, North Carolina with a highway debt of over \$98,000,000, Illinois with \$97,000,000, Pennsylvania with \$93,000,000 and California with \$65,000,000. In New York, Pennsylvania and California the debts have been reduced since last year.

In only one of these states with the highest total highway indebtedness is the per capita indebtedness relatively high, that of North Carolina being third with \$34, ranking after Delaware with \$43.33 and Oregon with \$38.72 per capita.

Since a previous survey was made by the Bank of America in 1925 more than \$355,000,000 worth of securities have been issued by the various States and about \$68,000,000 worth have been retired. The term State Debt as used in this survey refers only to unfunded or bonded indebtedness. It excludes all items of current indebtedness and no attempt has been made to determine the net debt since the methods of handling sinking funds and the arrangements for retiring bond issues differ in all the states and would make any such attempt to determine the net debt of very doubtful value.

How State Debts Have Been Spent

Purpose of Debt	Amount Outstanding		Per Cent	
	1927	1928	1927	1928
Highways	\$834,467,058.05	\$900,930,781.92	45.2	45.7
Soldiers' Bonus	271,528,000.00	282,430,000.00	14.7	14.3
Waterways and Harbors ..	222,508,800.00	224,484,800.00	12.1	11.4
Other Improvements	131,257,412.00	141,551,162.00	7.1	7.2
Agricultural Aid	119,264,339.39	120,187,839.39	6.5	6.1
Funding Operations	115,367,624.28	112,211,014.40	6.3	5.7
Welfare Institutions	53,457,750.00	65,765,600.00	2.9	3.3
Miscellaneous	30,137,697.07	44,648,626.48	1.6	2.3
Education	35,984,086.11	43,011,532.25	1.9	2.2
Public Buildings	17,845,523.28	26,561,523.28	.9	1.3
Other Military Purposes ..	14,295,287.54	9,571,287.54	.8	.5
Total	\$1,846,113,577.72	\$1,971,354,167.26	100.0	100.0

Saurer Develops New Methods of Testing Gears

Devices afford variety of checks, including uniformity of angular velocity transmitted by pair of gears.
System has been patented.

THE ADOLPHE SAURER CO., of Switzerland, has developed and patented two unique devices for testing and checking the gears employed in the Saurer commercial vehicles, which are well known throughout Europe.

Besides checking the clearance, circularity, tooth form and, in the case of bevel gears, the correctness of the tooth faces with regard to the point of intersection of the axes or vertex, these devices also check the uniformity of angular velocity transmitted by a pair of gears, a most important factor where silent running is concerned.

The following description of these testing devices is extracted from the *Automobile Engineer* of August, 1928, in which appeared a detailed story of Saurer production methods.

The spur gear testing apparatus, follows usual construction in so far as it consists of two movable ar-

nut the gear may be removed from the arbor or the arbor removed from the bushing in which it is mounted.

This bushing in the right hand slide is mounted directly in a boss on the slide and has provision for mounting a plain disk of the same diameter as the pitch circle of the gear being tested.

In the other arbor the bushing is free to revolve in an outer sleeve which runs in ball bearings in the slide housing. A disk with the same diameter of the pitch circle of the second gear is mounted on the outer sleeve and so can revolve independently of the gear.

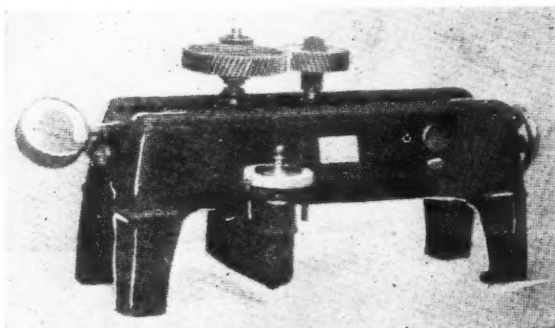
Thus when the slides are set at the correct center distances and the steel disks are held lightly in contact by spring pressure, the rotation of the right hand gear will both drive the other gear and give independent friction drive at a uniform angular velocity to the plain disk on the left.

To record any differences in angular velocity between the two drives, both the arbor socket and the outer sleeve are extended downwards and are fitted with pulleys to drive a recording apparatus by means of carefully tensioned steel tapes. The recording apparatus consists also of two separate co-axial sleeves driven by the tapes and revolving about a pillar on which the chart disk is mounted.

One of the sleeves carries a large diameter gear while the other is coupled to an outer casing in which the recording pen is pivoted. A small pinion on the pivot pin of the pen meshes with the large gear so that any relative movement between the two members is greatly magnified at the pen point.

In the bevel gear testing device the same general principles are followed but, obviously, the actual design must be quite different. In this machine the gear and its pinion are each supported in cylindrical barrels, housed in brackets, which are adjustable on a circular base.

The barrels may be adjusted axially by means of a



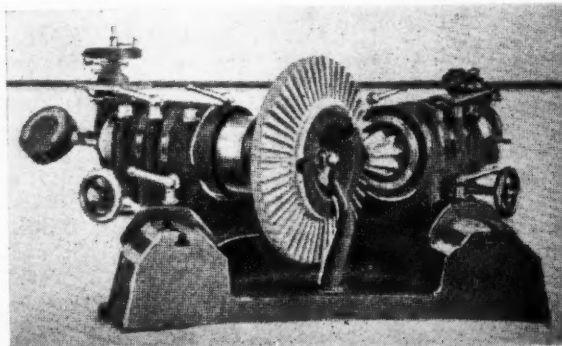
Saurer device for testing spur gears

bors for the gears to be tested. The right hand arbor is mounted on a slide which is adjusted to bring the arbors to the correct center distance for the particular gears to be tested.

The other arbor slide is arranged to move freely on a row of balls and may either be fixed at the correct center distance or may be given a small amount of play against spring pressure. This slide also operates a dial indicator reading in hundredths of a millimeter (.0004 in.) so that when the slide is left free and the gears are rotated in contact under spring pressure, any inaccuracies will be indicated by the dial gage.

Periodic errors occurring with each rotation of the gear indicate eccentricity, while errors repeated with each tooth denote incorrect tooth form. Superimposed upon these errors are those due to incorrect circular pitch, if any, and these are checked separately.

The gears are mounted in the machine on double ended, tapered arbors made with a screwed portion in the center to which a nut is fitted. By means of this



Saurer bevel gear and pinion testing device

hand wheel and rack and pinion on each and this, coupled with the possible adjustment around the circular base to cover any angle from 52 to 150 deg. by half minutes of arc, permits a wide variety of bevel gears to be tested.

Pinions with an integral shaft are gripped in a bushing which is pulled back into an accurately made collet fitting the coned mouth of a parallel sleeve fitting the barrel. The gear is also mounted by means of a collet but the central arbor is in communication with a thrust rod extending throughout the hand wheel spindle to operate a dial indicator at the rear of its barrel. The arbor is also mounted in a sleeve which can move axially in a second sleeve on rows of balls.

Both barrels are adjusted endwise by means of fixed stops in the base casting and rod or block gages, to obtain the correct distance from the vertex.

To test for accurate running the gear and arbor are left free to move and the pinion is rotated by means of hand wheel. Any inaccuracies are magnified 50 times on the dial gage actuated by the thrust rod from the gear.

To check the pitch of the teeth, or their transmitted velocity, the gear and arbor are locked in position and the rotary motion of the two gear sleeves is transmitted by means of beveled friction disks to two vertical spindles, on one of which the recording apparatus is mounted.

Each of these vertical spindles carries a disk which bears a fixed relationship to the gear ratio of the gears under test. The two disks are then coupled together to give a friction drive of the required ratio by means of a steel bar moving in roller guides and held in contact with the disks by light spring pressure.

The recording apparatus is essentially the same as that employed in the spur gear testing machine except that in the latter case one member can be directly driven from the disk beneath the recording mechanism while in the former the recorder is driven by the vertical spindle which receives its motion from the gear.

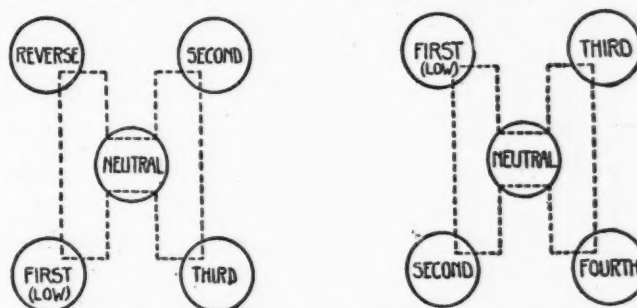
Standardized Controls

THE Standard Department of the British Society of Motor Manufacturers has issued a leaflet to members of the society on the subject of standardized controls. The recommendations relate to the gear-shift lever, position of clutch, brake and accelerator pedals, hand brake lever and throttle and ignition levers.

As regards the gear-shift, the arrangement suggested for three speeds (either central or right-hand lever) is that the reverse and first speed position should be on the left-hand side of the real or imaginary "gate," the reverse forward and the first rearward; from that it follows that the second and high are on the right of the gate, the second in front of the high.

No reverse position is specified for four-speed control, doubtless because it is realized that with a four-speed gearset there are several more or less equally favored arrangements for bringing the reverse gears into engagement, necessarily involving diverse positions of the lever. But the forward gear positions are given, the first being in the left-hand forward slot of the gate, from which the others naturally become: Second, back on the left; third, forward on the right; fourth, back on the right.

As regards clutch, brake and accelerator pedals, the recommended relative positions of these are clear when it is said that the accelerator is on the extreme right. For brake and gear-shift lever location it is suggested that the brake should be the farther removed from the



Gear-shift arrangements suggested to British automobile manufacturers for standardization. Left—Three speeds and reverse. Right—Four speeds forward, with reverse position unspecified

steering column, viz.: on the left of the gear lever when the latter is central and on the right of it when the gear lever is on the right-hand side. These positions are proposed, of course, for the right-hand driving seat, standard in England.

The recommendations as to throttle and ignition levers, when these are either above or below the steering wheel, are planned to eliminate the illogical arrangements so often obtaining at present, such as the forward movement of the ignition lever to retard the timing. The suggestions are, therefore, that to advance the ignition or to open the throttle the appropriate lever should be moved forward and vice versa.

WHILE the principal advantages of rubber spring shackles probably are their continued silence and their lack of need of lubricant, they also add to the cushioning effect of the springing system, as indicated by the term "shock insulator." Just how much cushioning effect these rubber shackles produce has been a moot point but some light is thrown on the subject by tests made at the Motor Vehicle Laboratory of the Charlottenburg Technical College on a 27-passenger Yellow coach by Prof. G. Becker, concerning which a report was published in *Der Motorwagen*. With the coach light—that is, without passengers—the load on each rear spring was 1725 lb., while with a full load on each rear spring it was 2535 lb., making the increase in spring load 810 lb. This increase in load caused a compression of the rubber of 0.118 in., measured in the vertical direction. The compression was measured for a range in loads from about 1100 lb. to about 2700 lb. For a change in spring load of 1650 lb. the compression was 0.259 in. The compression is not directly proportional to the increase in load, the "rate" of the rubber spring decreasing as the load increases. There is also a slight hysteresis effect. That is for the same load the state of compression of the rubber block is different according to whether the load has been increasing or decreasing previously.

The Yellow coach tested had semi-elliptic rear springs with helper springs and rubber shackles. The helper spring begins to take part of the load at a total load of 2750 lb. while the spring load for the empty coach is 3450 lb. The static compression of the rear springs when carrying only the empty coach (3450 lb.) was 3.75 in. while the static compression under full load (5075) was 4.9 in.

NEW DEVELOPMENTS—Automotive

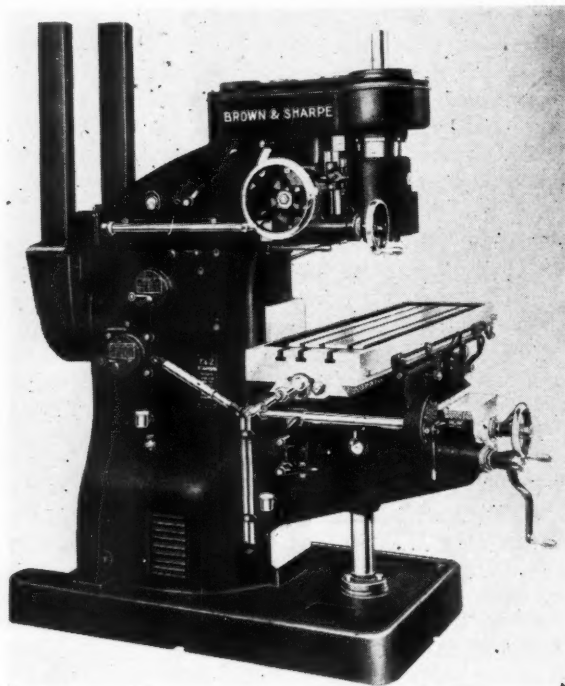
Vertical Spindle Miller

THE No. 2 Standard vertical spindle milling machine is the latest addition to the line of Standard milling machines being produced by the Brown & Sharpe Mfg. Co., Providence, and is similar in general to the other members of the line.

The machine is all gear driven and has two operating positions—at the front and at the rear of the table—at either of which all controls are within easy reach of the operator. Speed changes in two series are available with rates of feed or speed in use indicated by direct reading dials.

Another feature is the automatic disengagement of the power fast travel and engagement of cutting feed without attention on the part of the operator. Automatic lubrication is provided for all mechanisms in the column, the knee and driving pulley. Automatic feed is provided for the spindle which has also automatic release at any point.

The machine is available either as belt drive, fitted



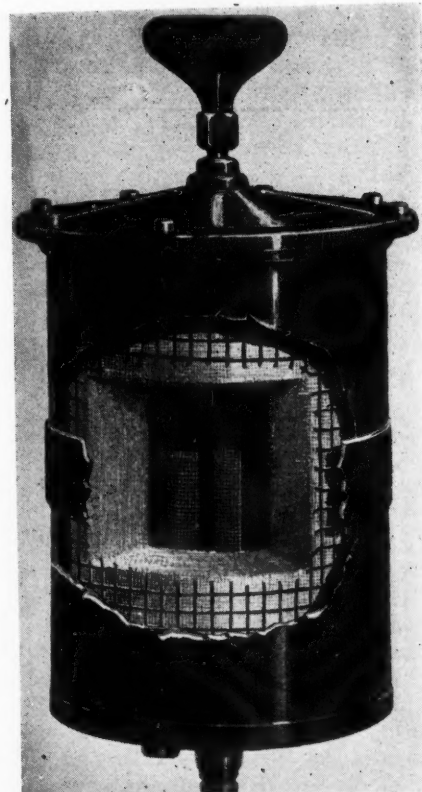
New No. 2 Brown & Sharpe Standard vertical spindle milling machine

for motor drive or equipped with a motor drive. The motor is located in the base and drives by chain and sprockets.

Stewart Oil Filter

A NEW oil filter which is said to be efficient for 10,000 miles without changing the filter element has been developed by the Stewart-Warner Speedometer Corp., Chicago. The filter consists of a sheet-steel can about 8 in. high by 5¼ in. in diameter. In the bottom are two openings through which used and clean oil flows in and out; in the top is another opening through which a stake with a knob attached ex-

tends. Inside is a roll of filter cloth composed of fine mesh cloth and a still finer filter material. About 27

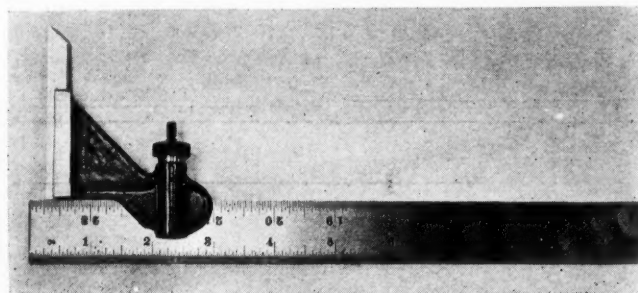


Cut-away section showing construction of new Stewart-Warner oil filter

sq. ft. of this material is wound in the form of a hollow cylinder into the center of which the used oil flows. The first three layers of filter clean the oil and when these layers are filled up, or when new oil is added to the crankcase, the knob on the top of the can is turned, which brings fresh, clean filter surfaces in contact with the oil.

B. & S. Height Gage

THE Brown & Sharpe Mfg. Co., Providence, has developed a new height gage attachment which, used on the blade of their combination square, makes a height point is read directly and it can be used in all positions gage of the tool. The vertical height of the scriber from the extreme top to the bottom of the blade. The frame of the attachment is drop forged while the pointer is of steel, hardened, tempered and ground.

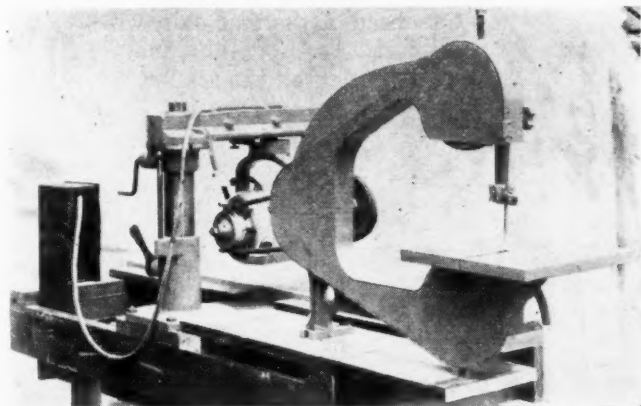


B. & S. height gage attachment for combination squares

Parts, Accessories and Production Tools

Portable Band Saw

THE De Walt Products Co., Leola, Pa., has developed a portable band saw which is said to have the power and capacity of an ordinary stationary band saw. By employing three tracking pulleys for the saw blade in-



De Walt portable band saw

stead of the usual two it has been possible to design a compact machine with 20 in. clearance in the throat between the saw-blade and frame, with capacity up to 7 in. thickness but which with floor standard and motor complete weighs but 210 lb.

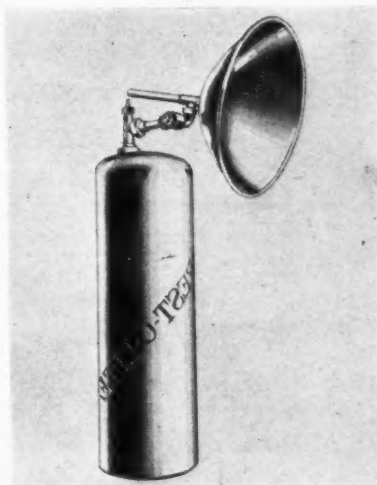
The machine is well guarded with only 8 in. of saw-blade exposed and that at the cutting point. The unit is to be used preferably as an individual motor-driven equipment, but it can also be used in connection with the De Walt "Wonder Worker" equipment.

The working table, 13 $\frac{3}{8}$ in. square, tilts 45 deg. to the right and 30 deg. to the left. A dial indicator measures the tilt in degrees. A $\frac{1}{2}$ hp. motor is used with V-belt drive.

Flood Light Attachment

A FLOOD light attachment for use with the familiar small tanks of dissolved acetylene has been de-

New Prest-O-Lite flood light attachment



veloped by the Prest-O-Lite Co., 30 E. Forty-second St., New York. The attachment is of simple and strong construction, the universal adjustment being obtained with only one swing joint. The 10-in. reflector can be taken off by removing a single knurled nut. The burner is placed at a fixed focal point and requires no adjustment while it is of a new type which will not carbon up.

Trench Digging Combination

AN interesting truck installation has been made by a Cincinnati contractor in adapting a Barber-Green trench digger to a Schacht truck chassis to provide a readily portable and easily controlled means for digging water connection in the city streets.

The Schacht truck has been provided with a special low gear reduction which permits a digging speed of 1 $\frac{1}{2}$ ft. per min. One operator can handle and control the complete outfit, a seat being provided on the right-hand side from which the ditch digger, as well as the forward movement of the truck while digging, can be controlled.

The chassis is of 3 $\frac{1}{2}$ -ton capacity with a 172-in. wheelbase. Its engine has a governed speed of 1000



Schacht-Barber-Green trench digging combination

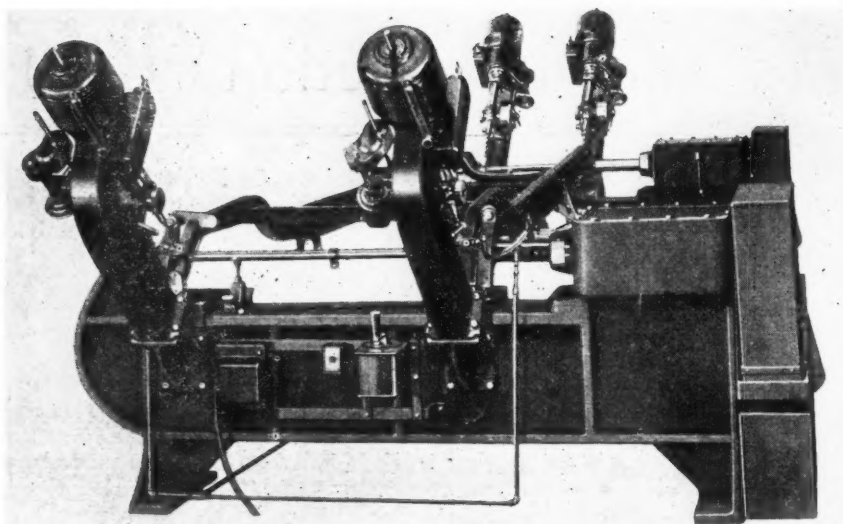
r.p.m. at which it develops 60 hp. Because of the exceptionally low gear reduction used a safety joint has been installed in the driveshaft which will shear under conditions which might endanger the differential gears.

The combination was developed and has been patented by O'Connell & Sweeney, general contractors of Cincinnati.

Frame Assembly Press

THE Hanna Engineering Works, Chicago, have brought out a new chassis frame assembly press designed particularly for use with frames in which one or more tubular cross-members must be pressed into the horns or outriggers which have been riveted to the side bar channel webs previously.

The press rams open wide to permit quick loading and the rams act in unison, advancing rapidly until they engage the side bar channel when the speed is automatically reduced and stopped when the side bars

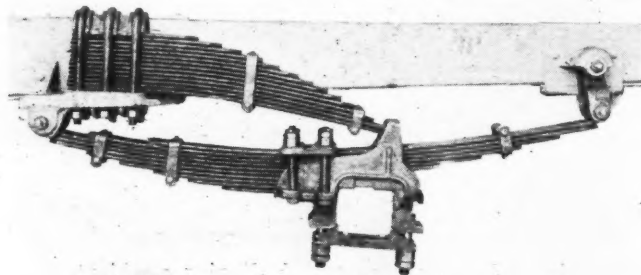
*Hanna chassis frame assembly press*

are properly spaced. Standard drill heads equipped with automatic feed engagement and reverse to quick return drill the holes for the rivets which dowel the tubular cross-members in place.

This is a self-contained unit equipped with motor drive, limit switch controls, drilling compound pump and sump and pressure lubrication for the operating mechanism.

Hug Road Tractor

A NEW road tractor model, known as Model 486 Hug tractor chassis, has been announced by the Hug Co., Highland, Ill. It has a three-ton truck rating and a trailer capacity of 15,000 lb. This model

*The Hug multi-cushion relax spring drive*

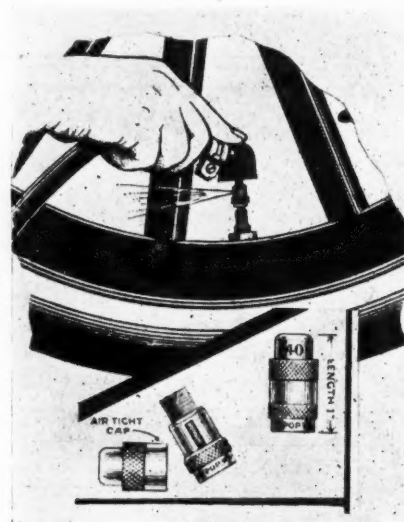
is equipped with a Buda DW6 six-cylinder engine, a transmission giving forward and two reverse speeds, a double-reduction rear axle, a heat-treated pressed steel frame and 34 by 7 in. pneumatic tires, single in front and dual in the rear. A special feature of the tractor is the use of the Hug multi-cushion relax spring drive which cushions drive shocks and obviates the need for other driving members.

The five-speed transmission incorporates an overdrive, and with the tractor empty, speeds of 40-45 m.p.h. can be obtained on fifth speed. A photograph of the multi-cushion relax spring is shown herewith. By means of a specially-designed casting, the lower side

spring is seated in front of the rear axle, while the top side spring or load-carrying member is seated in the rear of the axle. The new spring-drive is said to make it possible to drive through the springs without injuring them. By using the combination side spring as a torque member the driving force is cushioned and the driving units are protected against all sudden shocks. This arrangement of the drive makes it possible to locate the fifth wheel and the front of the trailer ahead of the rear axle, which is said to assure a well-balanced load distribution on the trailer.

Tire Pop-Valve

THE Tire Pop-Valve Co., Pontiac, Mich., has recently developed a device by means of which it is possible to get exactly the right air pressure in tires while inflating them and without using gages of any kind. The

*Tire pop-valve for getting proper tire pressure*

devices are sold in sets of four and screw onto the valve stems without disturbing the core valve. When the tire needs inflating the air hose is applied as usual and when the designated pressure is reached the pop-valve signals, after which no more air can pass into the tire.

*Hug Model 486 tractor with tank trailer*

In Step With the Spirit of the Times

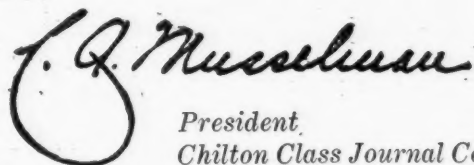
Automobile Trade Journal and Motor Age are Combining

AUTOMOBILE TRADE JOURNAL, the oldest and leading monthly publication in the industry, and *Motor Age*, the leading weekly, are being joined in one strong, outstanding publication worthy of America's leading industry. Concentration on this one publication of all of the money, effort and initiative previously resulting in two outstanding publications will make possible a new leadership unique in character and powerful in performance.

Editorially the new publication will render an unrivaled service to automotive retailers. It will be manned by the largest and most experienced staff ever concentrated on a single monthly automobile trade publication. It will be full of practical, useful ideas and information from cover to cover. The material will be presented in such a way as to make possible maximum use with minimum effort on the part of the reader. Its pages will be bright, attractive and readable, but also packed with important material concerning trade facts, methods and events. Backed by the full facilities of the world's largest automotive publishing house, this new publication is expected to set new standards in business paper editing.

The new *Automobile Trade Journal and Motor Age* monthly will have more than 60,000 paid trade circulation. We question if there is any trade journal in the United States, or elsewhere, that can match it in quantity and quality of circulation. Sixty thousand trade units represent a buying power of over 85% of America's largest industry, and to be able to cover all buying sources in this trade to within 15% of the total is an accomplishment well worth while.

Throughout the automotive industry, mergers and consolidations have been making for greater marketing efficiency, for better products and for greater dollar-for-dollar values. This combination of the two leading publications of the industry is distinctly in step with the spirit of the times.


President,
Chilton Class Journal Co.

News of the Industry

PAGE 350. VOLUME 59

Philadelphia, Saturday, September 8, 1928

NUMBER 10

August Production of 485,000 Sets New High Monthly Mark

Former Record in April, 1926, Exceeded by About 12,000.
As Eight Months' Total Mounts to 3,227,806—
Late Months to Show Increases

NEW YORK, Sept. 6—Car production for 1928 will establish a new record, in the opinion of officials of the National Automobile Chamber of Commerce. August production has set a new record for any month, with a figure estimated at 485,000 cars and trucks.

The highest previous record was established in April, 1926, when 462,809 cars and trucks were produced. The August figure of 485,000 is estimated, in as much as the actual production of the Ford Motor Co. was not definitely known when other August figures were tabulated. This compares, however, with 321,352 in August of last year.

Production for the first eight months of the current year is estimated at 3,227,806, compared with 2,795,979 for the first eight months of 1927, and falls only 72,011 short of the eight month period of 1926 when production totaled 3,299,817.

The reasons given for believing that 1928 production will exceed all previous records include the fact that August of this year showed the highest production of any month so far, whereas August is usually below some of the earlier months of the year.

The last four months of 1926, which was the largest previous year's record, showed an unusual decline in production, despite the fact that Ford was at that time at peak production. This company is now just beginning to build his production up toward its anticipated peak. Present Ford totals of 5000 daily are to be increased until 10,000 daily is reached.

Develops Casting Machine

TOLEDO, Sept. 4—A new type of two-arm machine for automatic casting of metals by the vacuum process has been developed by the Vacuum Castings Co. of Toledo.

The machine has been at work experimentally on production of battery plates. A number of automotive engineers have viewed the machine and it may be used in the industry for producing small parts from various kinds of metals.

Factories Continue Large Output Plans

PHILADELPHIA, Sept. 8—Unusually heavy production schedules for the time of year have been laid out by a majority of companies this month. Increases and curtailments at individual plants about balance, according to present indications, and will maintain output at or near the August level.

Sales are on a high seasonal level and are serving to keep dealers stocks within comfortable limits. At this time of year the used car normally becomes more of a burden but an active market for these vehicles is being maintained beyond the usual time of recession.

Ford is gradually stepping up production, the main deterrent in recent weeks having been difficulty in obtaining parts. It appears possible that the company's output this month may reach the 100,000 mark for the first time in more than a year. But other producers in the low-priced field show little decline from the levels of the summer months and are apparently finding demand for their products satisfactory.

Truck production, after many months of sub-normal operations for the industry as a whole, took a sharp upswing early in the summer and is well above the level of a year ago.

Graham-Paige Statement Shows \$29,578,770 Assets

DETROIT, Sept. 5—Graham-Paige Motors Corp. statement as of June 30, after giving effect to sale of \$3,000,000 6 per cent sinking fund gold debentures and application of the proceeds as additional working capital, shows total assets of \$29,578,770. Common stock

and surplus totaled \$12,612,768, current assets \$17,277,665 and current liabilities \$7,864,573.

Current assets include cash \$6,305,677, dealers' accounts \$3,128,423, open accounts subsidiary companies \$1,860,331, accounts receivable \$205,742, inventories \$5,777,491.

Truck Sales Expansion is Planned by Overland

TOLEDO, Sept. 1—Willys-Overland Co. will develop its truck business on a large scale in 1929, George M. Graham, vice-president, told sales representatives at a factory meeting here this week. The Overland company stands in fourteenth place among 39 truck makers, Mr. Graham said, and it has only begun to get active in this field. Truck sales in 1929 will be an astonishing portion of total sales, he said.

Forecast of a good year for automobile salesmen in 1929 and the hint that Willys-Overland is planning developments for announcement Jan 1, was made by John N. Willys, president.

"I feel that we are on the eve of great developments," said Mr. Willys. "I can see a big production for 1929. We have four modern plants. We have more than 1500 dealers abroad in every country of the world. In my 21 years here the picture was never brighter."

Landers Corp. Unites 3 Fabric Companies

TOLEDO, Sept. 4—The Landers Corp. is the name of a new company which will take over the Landers Brothers' Co., Toledo Auto Fabrics Co. and the American Buckram, Weaving & Finishing Co. here, which have been closely associated for many years and which send a large part of their annual production into automotive channels.

The company will be capitalized at \$1,000,000.

Ralph A. Landers is president; Dean Higgins and L. D. Stickney, vice-presidents; F. DeWitt, secretary; P. E. Roper, treasurer.

Make Temporary Price Cut

NEW YORK, Sept. 5—Temporary reductions of 20 per cent have been made in the price of second grade tires manufactured by the United States Rubber Co. and the Goodyear Tire & Rubber Co. It is claimed that these reductions are made to meet a temporary 20 per cent cut on Oldfield tires.

Factory Totals Show Increases in August

Several Companies Report Record Months—September Schedules Continue High

DETROIT, Sept. 4—Reports by many leading companies on August production show a general increase over output in July and over August last year. In nearly every case output for the first eight months of the year has been brought above the figures in the same period last year. Continuance of active manufacturing is expected.

Output of Willys-Overland Co. is expected to reach 28,500 though definite figures are not available at this time.

Buick Motor Co. shipped 27,000 cars as against 15,000 in July. The September schedule is for 32,000 cars.

Hudson Motor Car Co. shipped 22,000 cars against 25,300 in July and 30,960 in August, last year. Eight months' shipments total 230,271 against 236,978 in the 1927 period.

Graham-Paige Motors Corp. shipped 11,207 in August, an increase of 2200 over July. The eight months' total is 58,780.

Studebaker Corp. of America, Inc., shipped in excess of 15,000 units as compared with 11,437 in August last year.

Packard Motor Car Co. shipped 5001, this exceeding May, the best previous month, by 219, and comparing with 3934 in August, last year. Shipments in the fiscal year ended Aug. 31 totaled 47,178 against 32,222 in the 1927 fiscal year.

Olds Motor Works shipped 7773 in August. Shipments for eight months approximate 68,000.

Hupp Motor Car Corp. shipped 7023 as against 5010 in July and 2613 in August last year. Eight months' shipments total 50,457 against 23,007 in the 1927 period. Export shipments for eight months total 4087 against 2032 last year.

Reo Motor Car Co. shipped 4823 cars and trucks as against 4814 in July and 4468 in August, last year. September schedule is 5500. Nine months sales to Aug. 31 total 35,281 against 33,355 in the corresponding period last year.

Cadillac Motor Car Co. shipped 5142 Cadillac and LaSalle cars, an increase of 600 over the best previous month. Monthly schedules are for 5200 cars. Marmon Motor Car Co. shipped 1768 cars in August, the largest August in its history. Unfilled orders indicate a new September record.

Dodge Bros. Corp. reports sales in August increased 43 per cent over July. Peerless shipments in August were 978 against 1001 in August, 1927.

Libbey-Owens to Acquire Shreveport Glass Plant

TOLEDO, Sept. 4—The Libbey-Owens Sheet Glass Co., which will complete a new plate glass unit here

on Oct. 1, capable of making an additional 8,000,000 sq. ft. of plate glass, and a new laminated glass plant on Dec. 1, capable of turning out 10,000,000 sq. ft. of the non-shatter glass, has made arrangements for taking over the plant of the United States Sheet & Window Glass Co., at Shreveport, La., under a plan to be submitted to shareholders of the latter company on Sept. 19.

The new unit will provide similar facilities for assembly plants in the South and West, will serve South America and other countries.

Burst Heads Moon, McDonald Chairman

ST. LOUIS, Sept. 4—Carl W. Burst, vice-president and works manager of Moon Motor Car Co., has been elected president succeeding Stewart McDonald who becomes chairman of the board, a newly created position. All other officers of the company have been re-elected.

In electing Mr. Burst to the presidency, directors paid tribute to the many years during which he has been an executive officer, having been successively superintendent, purchasing agent and general manager.

Mr. McDonald had been president of the Moon company since 1919, succeeding to the position on the death of J. W. Moon. He joined the company in 1911 after several years of railroading. In 1912 he was made vice-president and general manager.

Eldridge is Named Reo Sales Manager

LANSING, Sept. 5—C. E. Eldridge has been appointed general sales manager of Reo Motor Car Co., succeeding C. A. Triphagen, resigned. Mr. Eldridge has been associated with the Reo company 12 years, starting as assistant general manager of the Chicago branch. He later became Chicago branch manager from which position he was promoted to assistant general sales manager at the factory.

Stutz Pike's Peak Winner

DENVER, Sept. 4—Glenn Shultz, driving a Stutz Special, won his third victory and permanent possession of the Spencer Penrose Trophy in the Pike's Peak classic today. In spite of icy roads his elapsed time of 17 min. 41 2/5 sec. broke the record made in 1925 by E. H. Meyers of 17 min. 48 2/5 sec. Proctor Nichols, driving a specially constructed car, was second in 19 min. 1 3/10 sec.

N.A.P.A. Sales Gain 18.9%

DETROIT, Sept. 4—National Automotive Parts Association reports a net gain of 18.9 per cent in sales by its members in the first six months this year as compared with the same period in 1927.

Business in Brief

Written by the Guaranty Trust
Co., New York, exclusively for
AUTOMOTIVE INDUSTRIES.

NEW YORK, Sept. 6—Although a few secondary trade lines show a tendency to lag, September has opened with favorable prospects, and the autumn outlook for business is encouraging. Competition is keen, and the margin of profit is small; but this is offset to considerable extent by large volume of production.

FREIGHT CAR LOADINGS

Car loadings for the week ended Aug. 18 continued to run above 1,000,000 cars a week, but fell below the loadings for the corresponding week a year ago and two years ago.

PETROLEUM PRODUCTION

The daily average gross crude oil production for the week ended Aug. 25 was estimated to be 2,477,450 bbl., as compared with 2,444,500 bbl. for the preceding week.

FISHER'S INDEX

Professor Fisher's index number of commodity prices for the week ended Aug. 30 was 100, comparing with 99.9 the week before, 100.1 two weeks before, and 99.4 three weeks before.

BANK DEBITS

Bank debits to individual accounts outside of New York City amounted to \$4,791,000,000 for the week ended Aug. 29, which is 3 per cent above the corresponding period last year.

STOCK EXCHANGE

The stock market in the past week has continued its buoyancy in the face of a call money rate which ranged between 7 and 8 per cent. There was no appreciable change in brokers' loans, but the volume was heavy, and many new highs for the current year were reached. The volume of trading for the month of August was the highest of any August on record. Sales for the month totaled 67,703,588 shares, compared with 39,001,098 shares in July, and 51,056,628 shares in August, 1927. Dividends declared during August also reached a very high total of \$321,208,644, compared with \$151,360,710 in July, and \$259,936,422 in August, 1927.

FEDERAL RESERVE REPORT

The combined Federal Reserve statement for the week ended Aug. 29 suggests that the reserve banks have somewhat altered their open market policy of the recent past. There were increases for this week of \$1,300,000 in holdings of discounted bills, \$700,000 in bills bought in the open market, and \$2,100,000 in holdings of government securities. There was a decrease of \$11,900,000 in member bank reserve deposits; but the reserve ratio dropped slightly to 69.5, for there was an increase of \$9,000,000 in Federal Reserve notes in circulation.

Mengel to Produce Willys Body Parts

Louisville Company Will Build \$1,000,000 Addition to Handle New Business

LOUISVILLE, KY., Sept. 3—Mengel Body Co. has reports signing a contract with the Willys-Overland Co. for large production of body parts, to be shipped in solid car lots from Louisville to Overland assembly plants. The Mengel company will build a second unit to the body plant, which makes the third Mengel body plant here. The Overland contract calls for deliveries on or before Jan. 1, 1929.

The new plant will be built primarily to fill the Willys-Overland contract. All plans had been made and both contracts were closed the same day. The new plant will be 275 x 440 ft., plus loading docks, dry kilns, etc., and served by the Southern and Louisville & Nashville railroads. It will cost approximately \$1,000,000, including kilns and machinery.

Part of the new plant will have to be ready in about 10 weeks, in order that kilns may be started to get lumber dried and ready for production. The plant will operate on mass production, with lumber moving from inbound cars to unloading docks, where it is placed on kiln trucks, run through the kilns and to the manufacturing departments, and finally out on the other side to loading docks where it will be loaded into box cars.

The Mengel Co., the parent corporation, is also operating a large automobile woodworking plant here. The Mengel Co., originally the Mengel Box Co., operated the largest box plant in the world, producing general lines of boxes. Automobile woodworking now constitutes about 90 to 95 per cent of its total production.

C. C. Mengel is president of the Mengel Co., and vice-president of the Mengel Body Co., while William L. Hoge is president of the Mengel Body Co., and vice-president of the Mengel Co. J. T. Dugan is secretary-treasurer of the Mengel Body Co. and J. T. White is factory manager.

Hayes Gets Marmon Order

INDIANAPOLIS, Sept. 3—Marmon Motor Car Co. reports that contracts have been awarded to Hayes Body Corp. for certain body types, but says the Murray Corp. of America will continue to be the major body source of the company.

To Build Capital Planes

LANSING, Sept. 3—Capital Aircraft Co. will begin production here of a two-place monoplane, it has been announced by D. D. Thomas of Detroit, president. Production of the two-place, 60 hp. monoplane will begin Sept. 10. Plans call for two planes a week.

10,753 Miles of Road Under Way in 1928

WASHINGTON, Sept. 3—A chart just issued by the government showing progress in Federal Aid road construction to July 31, 1928, discloses that 71,584.9 miles have been completed since 1917, and 10,753.9 miles of roads are under construction at a total estimated cost aggregating \$264,000,000 of which the Federal Aid allotment will exceed \$105,000,000. More than 3250 miles of road in addition have been approved for construction at a total cost of \$70,692,000, the Federal Aid allotment for which will be approximately \$26,737,000. There is a balance of more than \$48,500 still in the hands of the Federal government for expenditure on Federal-Aid road projects.

Pierce-Arrow Shipments Double Volume in 1927

BUFFALO, Sept. 3—Pierce-Arrow's aggressive policy of sales expansion, reflected in the recent reductions which brought Pierce-Arrow prices to the lowest in history, has resulted in the greatest volume of sales of any August in the company's experience. Shipments for August are nearly double, and the company has approximately three times as many unfilled orders on its books as it had a year ago. Dealers' stock are at a lower ebb than ever before.

Sales of the new series 81 line of cars, now priced at \$2,475 and upward, have been the biggest factor in Pierce-Arrow's success march, directly resulting in a stepping up of production at the Pierce-Arrow factory at Buffalo. Large additional quantities of material have been ordered. Keeping pace with the huge increase in passenger car business, the Pierce-Arrow commercial car division reports a big gain in shipments of commercial cars.

Oakes Sales Increase

DETROIT, Sept. 3—Oakes Products Corp. business is exceeding all expectations, it was announced yesterday by Claire I. Barnes, president. "Sales during June were 35 per cent ahead of May and July business was 25 per cent ahead of June and double that of July, 1927," Mr. Barnes said. The company has increased its factory force about 70 per cent since April, he added.

Dayton Sales Gain 50%

DAYTON, Sept. 3—Sales of the Dayton cog belt have increased 50 per cent in the first eight months this year over the same months in 1927, according to J. A. MacMillan, president of the Dayton Rubber Mfg. Co.

Chrysler to Build Record in September

Orders Total 53,417 as Month Opens—Sets Day Mark of 1370

DETROIT, Sept. 4—Chrysler Corp. announced yesterday that it had received, as of Sept. 1, orders for 53,417 cars for September shipment to Chrysler and Plymouth distributors and dealers. J. W. Frazer, Chrysler and Plymouth sales manager, says this is by far the largest single month's order for cars the company has ever received. It follows immediately after the two months of greatest previous demand in its history.

Demand for the "75," and "65" and the Chrysler-Plymouth since the day of their announcement, July 5, has surpassed everything the company has ever known heretofore, reports Mr. Frazer. In response to it, he said, "we have enlarged our productive facilities to the highest point yet attained without being able to fill the flood of orders that have come to us from every part of the United States, Canada and from overseas."

Chrysler has consistently been upsetting its previous greatest records for production and shipments. Each week practically establishes a new high weekly mark. September output, while it cannot equal the orders received, Mr. Frazer reports, will be the largest month the company has ever known. Its last previously announced high mark for a single day of 1321 cars was surpassed a few days later by one of 1354, to be exceeded later the same week by another of 1370.

Diamond Chain Expands

INDIANAPOLIS, Sept. 3—The Diamond Chain & Mfg. Co. of Indianapolis has completed plans and placed contracts for a large additional factory unit four stories high that will add 40,000 sq. ft. of floor space to its plant. The additional capacity has been made necessary because of the greater use of Diamond roller chain on machinery, and more particularly the high speed power drive applications. The production of Diamond timing drive chain for motor cars has increased to the point where additional manufacturing space is required also for this department.

White Exports Rise 30%

CLEVELAND, Sept. 3—White Motor Co. reports the largest export business in its history in August and in the past eight months reports an increase of 30 per cent in its export trade. Domestic business in August showed increases over both August last year and July this year. Both light and heavy buses have been selling in increasing volume, with the six-cylinder bus leading.

Hupp Storage Unit to Assist Shipments

New Eight-Story Building
Will Provide Also for
Engineering Needs

DETROIT, Sept. 3—To keep pace with continued heavy demand for Hupmobile cars, Hupp Motor Car Corp. has let contracts for a new unit of its Detroit plant which will double shipping capacity. Operations are to be pushed and it is expected that the structure will be ready for occupancy by the first of the year.

The additional unit, which is to be of concrete slab construction, is conveniently located on property recently acquired by the company just east of its main plant. Designs show liberal provision for storage of new cars while awaiting shipment after they come off the production line, as well as adequate space for the Hupmobile engineering division, which will be quartered in the new building.

The plans provide for an eight-story building, fronting a little more than 200 ft. on Mt. Elliott Ave. and running back to a depth of approximately 150 ft. Seven of the eight floors will be devoted to car storage purposes, the top floor being given over to offices of the engineering department and the basement housing the engineering laboratory. Shipping docks and tracks are included in the project. A bridge across Mt. Elliott Ave. will provide means for transporting finished cars from the main plant to the new storage unit.

Tires Add to Car Duty

WASHINGTON, Sept. 3—American shippers of automobiles to the French West Indies are advised by the Department of Commerce that a substantial saving in duties may be achieved by shipping the automobiles and tires separately. The department is informed by a representative in Martinique as follows: "One thing which would place agents of American products in a slightly better position to meet the keener competition of foreign automobile manufacturers would be to ship American automotive products using pneumatic tires without tires and to ship the tires separately. On lower priced cars now coming into this market a saving of about \$20 can be made on each car. This arises out of the customs regime in force."

Globe Tubes Adds Unit

MILWAUKEE, Sept. 1—The Globe Seamless Tubes Co. is building a one-story addition, 110 x 240 ft., to its rolling mill in West Allis. The improvement, costing about \$100,000 with equipment, is to be ready about Oct. 1. The company is an extensive manufacturer of seamless tubing for the automotive industries. Frank J. O'Brien is president and general manager.

G.M. to Add Space to Flint Institute

FLINT, Sept. 1—Extensive additions to the General Motors Institute of Technology have been approved by the executive committee of General Motors Corp., according to E. T. Strong, president and chairman of the board of regents of the institute. The additions, consisting of 35,000 additional feet of floor space, will be used to expand the capacity of all departments and laboratories. The original buildings were planned for an enrollment of 2000 but during the past year enrollment reached 7652. Aside from the extension and spare time courses, the heaviest enrollment was in the foremanship training department with a total of 3048.

Seaman Body Buys Additional Property

MILWAUKEE, Sept. 1—To facilitate future expansion, Seaman Body Corp., a half interest in which is owned by the Nash Motors Co., has acquired a tract of 20 acres at a cost exceeding \$100,000 across the street from its present factory, the site of which is now fully occupied by additions erected during the past two years. The new site is bounded by the tracks of the Chicago & North Western and the Chicago, Milwaukee, St. Paul & Pacific tracks. In view of the fact that a factory extension was completed only recently, there is no immediate prospect of new construction on the recently acquired tract, although the progress of the "400" series of the Nash in the American and foreign markets is taxing the capacity of the enlarged plant.

Wisconsin Parts Builds

OSHKOSH, WIS., Sept. 1—Capacity of the plant of the Wisconsin Parts Co., Oshkosh, Wis., manufacturer of axles for passenger and commercial cars, motor coaches, gasoline railroad cars, etc., is being increased materially by new construction now under way and expected to be completed Oct. 1. A two-story office unit and a one-story production section connecting the office with the present plant are being built.

Otis Adds Furnace

DETROIT, Sept. 1—Otis Steel Co., Cleveland, will proceed immediately with the building of a new open hearth steel ingot furnace, it was announced by E. J. Kulas, president. This is the second of a program of three new furnaces authorized early in 1928.

Insurance Director Quits in Bay State

Controversy Over Increased
Rates Brings Resignation
—Old Rates to Stand

BOSTON, Sept. 1—Wesley E. Monk, commissioner of insurance for Massachusetts, around whom has raged a battle over his increase of insurance rates for cars in the Bay State, in some cases nearly 100 per cent, resigned this morning. He was to have announced the new rates today. Attorney General Warner's office in a statement said the old rates would continue. Some insurance companies which have operated at a loss are expected to discontinue writing this business.

For the past week there has been a hysteria of clamor over proposed increased rates. Governor Alvan T. Fuller in a letter to Commissioner Monk yesterday suggested that the rates be scaled down by cutting off 25 to 50 per cent of the reserve allowed insurance companies for unsettled claims.

Lieutenant-Governor Frank Allen, candidate for governor, had conferences with Commissioner Monk, and sent him a letter protesting his action. Attorney-General Warner, in a letter to the commissioner, said that in his official capacity he did not want to be put in the position of having to go into court to defend the rates against the public.

Those who have followed the controversy impartially agree that the commissioner was a victim of the law governing the rates. He had to make the rates by Sept. 1, and the law specified that he should guarantee the insurance companies a fair profit on their investment. He had to accept the figures of the insurance actuaries on expenses, etc., and he based his rates on these.

Graham-Paige Field Men See Factory Improvements

DETROIT, Sept. 1—Graham-Paige district manager and branch field representatives were in convention in Detroit this week, to view the extensive improvements and additions to Graham-Paige production facilities, and for a series of conferences on sales and service policies. A distinct innovation marked the program in that, instead of the groups being addressed by the factory officials, each manager and field representative was scheduled to have one hour's personal conference with the officers and department heads of the company.

Inspection trips included tours of the main factory where new buildings totaling 126,800 sq. ft. are now under construction; of the body plant at Wayne, Michigan, and of the recently acquired buildings at Fort and McKinstry streets now occupied by Graham-Paige service and export shipping departments.

Men of the Industry and What They Are Doing

Lawrence Sees Increase in Latin America Sales

Active interest in highway improvement in Mexico, the five republics of Central America, Panama, Colombia and Venezuela, which have already initiated intensive road-building projects in a number of those countries, was reported by John V. Lawrence, special representative of the National Automobile Chamber of Commerce, who reached New York today (August 29) on the steamer Lara from Laguayra, Venezuela, after a six-month visit to those countries.

While traveling in these nine southern republics, Mr. Lawrence lectured in Spanish on traffic control and safety work, highway financing, planning and construction as well as on the broader aspects of motor transport's economic value.

Special trade meetings were held with motor dealers in all of the cities visited to discuss trade topics, such as selling, servicing and the financing of sales. Excellent prospects were looked for by all of these dealers and a general survey of all the countries would indicate that sales will show a 50 per cent increase, at least, over last year.

Hunsaker Vice-President

Commander J. C. Hunsaker, formerly of the U. S. Navy, has been elected vice-president of the Goodyear-Zeppelin Corp. and will be engaged in research and the development of commercial relations in connection with airships, according to P. W. Litchfield, president of Goodyear Tire & Rubber Co.

Taylor Succeeds Lehr

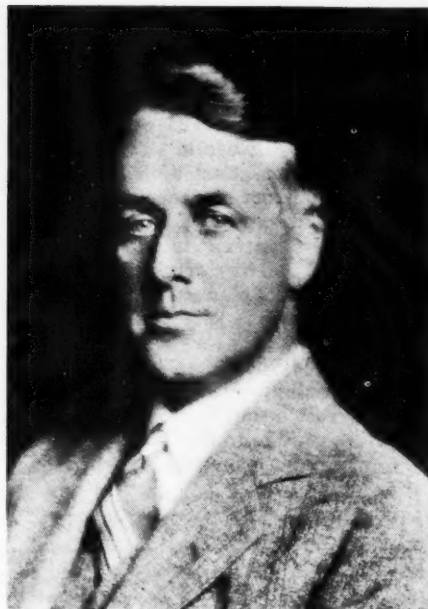
D. D. Taylor succeeds H. G. Lehr as superintendent of distribution for the Oakland Motor Car Co. district centering in Minneapolis. Mr. Lehr will have charge of fleet sales in Chicago for the Western district. Mr. Taylor has been field representative in Minneapolis territory for three years. Formerly he was with Chevrolet.

Dodge Representatives Change

Leo C. Sherry has been appointed commercial car and truck representative of the Dodge Bros. Corp. for the California district, with headquarters in San Francisco. He replaces Walter S. Graves, who has been transferred to Kansas City as district representative.

Van Wagner Joins Moon

J. C. Van Wagner has been appointed district manager covering the south Texas territory for Moon Motor Car Co. Mr. Van Wagner was formerly connected with the Auburn Automobile Co. of Milwaukee, and Buick Motor Co., as a special representative.



A. J. Chanter

Mr. Chanter is now first vice-president and general manager of Pierce-Arrow Motor Car Co., and Mr. Warner is vice-president in charge of manufacturing. Both were long identified with the Studebaker Corp. of America.



B. H. Warner

Auburn Promotes Ingold

Gustav Ingold, for the last four years service manager for the Auburn-New York Co., has been appointed supervisor of service and maintenance in all foreign countries for the Auburn Automobile Co.

Pratt Goes to Louisville

G. W. Pratt, who has been with the Cincinnati district office of the Hudson Motor Car Co., has gone to Louisville, as manager of the Louisville district office, filling a vacancy caused by the transfer of Charles G. Beeching to Omaha.

Demaray Joins Auburn

E. J. Demaray, former export manager of Republic Truck Co., has joined the export sales department of Auburn Automobile Co. as traveling representative in the Caribbean district, including Mexico, Cuba and Central America.

Harris Executive Engineer

J. D. Harris, for many years chief engineer of McCord Radiator & Mfg. Co., has been advanced to the position of executive engineer. No appointment has yet been made to the position of chief engineer.

Takes Traffic Position

Arthur C. Puscher, traffic manager for the Larrabee-Deyo Motor Truck Mfg. Co., Binghamton, N. Y., has been appointed traffic manager of the Binghamton Chamber of Commerce.

Effects of Mergers Topic at M. & A.M.A. Conference

NEW YORK, Sept. 5—The Motor & Accessory Manufacturers Association has announced its program for the credit conference to be held in the Statler Hotel, Buffalo, Sept. 13. The general theme of the meeting will be current and prospective business conditions and the effect of corporation mergers on the industry and the public. Three speakers, supported by an open forum, will bring out the details of these vital subjects.

The program of the general meeting follows: Chairman, J. M. McComb, vice-president, Crucible Steel Co. of America, president of the M. & A. M. A.; Random Thoughts on General Conditions, Samuel B. Botsford, general manager, Buffalo Chamber of Commerce; Our Industry's Greatest Year—Then What, Neal G. Adair, manager, sales development department, M. & A. M. A.; Mergers and the Public Good, C. S. Davis, treasurer, Warner Gear Co.

July Retail Trade Gains

WASHINGTON, Sept. 6—Retail trade during July was slightly larger in volume than is usual in midsummer, according to the survey made public by the Federal Reserve Board. Comparing the month with July, 1928, sales of department stores were 3 per cent larger and those of mail order houses were 28 per cent larger.

Export Plants Take \$7,312,875 in Parts

Increased Assembly Business Abroad Shown in Report for First Half

WASHINGTON, Sept. 6—With more than \$7,300,000 worth of automobile parts exported during the first six months of 1928 to foreign assembly plants by manufacturers in the United States, the automotive division of the Bureau of Foreign and Domestic Commerce forecasts continued expansion of foreign assembly plants for American cars to lower delivery prices abroad.

The bureau points out that in 1923 establishment of six foreign branch plants with consequent sales of 76,000 units marked the start of foreign assembly operations which by the end of 1927 were being conducted in 29 plants with the volume of sales increased to about 198,500 passenger cars, trucks and chassis, representing an increase of 161 per cent in unit sales during the five-year period.

During the first half of 1928 the United States exported \$7,312,875 worth of parts for assembly and engines, as compared with \$6,933,725 worth during the corresponding period of 1927—exclusive of exports to Canada amounting to \$26,354,606 in the 1927 period and \$30,325,707 in 1928. Assembly sales decreased in the first half of 1928, being 98,751, or 15 per cent lower than the corresponding period of 1927, when they were 113,922, due mainly to low Ford operations.

During the first half of 1927, 69,315 passenger car, truck and bus engines were exported. This number increased to 76,932 in the 1928 period. Forty per cent of the 243,467 units exported during the first six months of 1928, excluding Canadian takings, were assembled in foreign branch plants of companies controlled in the United States. During the first six months of 1928 open cars accounted for 34 per cent of the total automobiles assembled abroad, while the percentage of this class during 1927 was 44 per cent.

Chilean Market Active

WASHINGTON, Sept. 6—A cablegram from Santiago informs the Department of Commerce that sales of automobiles in all classes are much more active in Chile this season than during the corresponding period of 1927, especially with regard to low priced cars. Market conditions for accessories, wholesale and retail, are termed excellent.

Turkey Cuts Truck Purchase

WASHINGTON, Sept. 3—Unwillingness of manufacturers to grant credit terms of from three to four years to the Turkish Government has resulted in the originally planned number of 400 trucks to be purchased by Turkey

being cut to a total of 300 to 330 units, with a two-year credit, the Department of Commerce announced. The office of the bureau of foreign and domestic commerce in Constantinople has sought an extension of time for filing bids from the original deadline of Aug. 30 to the latter part of September, but no definite advice has been received to date as to whether the extension will be granted.

Imperial Airways Line to Pay First Dividend

LONDON, Aug. 22 (*by mail*)—It is announced that Imperial Airways, the British combine effected four years ago of air services with headquarters in London, will pay its first dividend shortly, 5 per cent for the year ended March 31 last. This is held to be an event of note in the annals of British air transport, for it indicates that within four years of the formation of the company its prospects are such that the board can afford to make disbursements, instead of retaining all profits for development.

The actual profit made for the year, including the subsidy, is £72,000. The amount of the latter received last year was £137,000, the same figure as that for the preceding years, and under a new agreement the company's prospects of reaching an entirely self-supporting basis should be brighter still, as more profitable routes of an Empire character are to be opened.

For the year ended March 31, 1927, the company made a profit of £11,461, all of which was used to reduce the previous deficit, and the jump this year to a profit of £72,000 is attributed to the gradual improvement of the fleet, the soundness of the management on the operational side, and the increasing public patronage.

All Durant Trucks Rugbys

NEW YORK, Sept. 4—The Durant four-cylinder half-ton light delivery truck and the Durant four-cylinder convertible business roadster hereafter will bear the Rugby name. Radiators on all commercial vehicles put out by the Durant company in the future will, therefore, show the Rugby name, which will also appear on each side of the hood.

Thomas W. Connor

DETROIT, Sept. 1—Thomas W. Connor, recently retired president of the Ditzler Color Co., died suddenly after an operation in Rochester, Minn. For more than 25 years Mr. Connor was an official of the Detroit White Lead & Color Works, and for 15 years prior to his retirement three years ago he headed the Ditzler company.

Bear Opens Trade School

ROCK ISLAND, ILL., Sept. 3—Bear Mfg. Co., manufacturer of wheel and axle alignment equipment, has opened a school at the plant for the instruction of mechanics.

Financial Notes

Singer Motor Co., England, reports profits for the year ended July 31 of £171,222 as compared with £140,364 for 1926-7 and £121,953 for 1925-6. As a result the distribution will be on the same scale as last year, viz.: 12½ per cent dividend and a cash bonus of 7½ per cent, despite the larger capital ranking for a full year's distribution. In accordance with an intimation of June last, it is proposed also to make a bonus distribution out of reserves in the form of one 7 per cent cumulative preference share for every two ordinary shares. As the present ordinary capital is £666,760, this will involve a capitalization of £333,380 of the reserves. The total of the surplus, reserves and undivided profits a year ago was £678,706, of which the major part has been derived from premiums on share issues.

Gardner Motor Car Co., in a report covering the first six months of this year shows assets of \$1,860,877 as against current liabilities of \$162,120, a ratio of better than 10 to 1. The statement shows cash on hand in banks of \$1,253,818, with \$300,000 out on call loans. Sales for the six-month period totaled \$3,270,382, net profit being \$201,575. The company's sales for the first six months of this year were about 68 per cent of the full 1927 total. The dealer organization has been increased 23 per cent and working capital has more than doubled since Jan. 1, 1927.

Bohn Aluminum & Brass Corp. has declared a dividend of 75 cents a share, thus placing the stock on a regular annual \$3 basis. The previous rate was \$1.50 per year. The dividend is payable Oct. 1 to stockholders of record Sept. 15. Following the directors' meeting, P. A. Markey, treasurer, said: "We are in excellent financial shape and the outlook for the balance of the third-quarter continues good. Two of our plants are working day and night and we expect a 10 per cent pick-up in business in September over July and August."

Galesburg-Coulter Disc Co., in seven months ended July 30, shows net profit of \$552,000 after all charges but before taxes against \$286,000 in same 1927 period, according to R. C. Ingersoll, president. Plants are working two eight-hour shifts despite the fact that this is ordinarily the company's slack season. This company has secured the largest order in its history for clutch disks and brake housings.

Brown Mfg. Co. common stock will be traded ex-rights on the Detroit Stock Exchange. Common stock of the company has been increased from 75,000 shares to 100,000 shares. Stockholders are given the right to purchase the additional stock at \$10 a share. Each share of old stock entitles the holder to one right. Three rights permit the purchase of one share of new.

Reo Motor Car Co. has declared an extra dividend of 3 per cent in addition to the regular quarterly dividend of 2 per cent. These dividends represent a disbursement of \$1,000,000 for the quarter and are payable Oct. 1 to stock of record Sept. 10.

Glidden Co. reports for the nine months ended July 31, 1928, net profit of \$1,356,309 after charges and Federal taxes, comparing with \$916,053 in the same period last year.

Texas Registrations Show Sales Increase

Gains Over Four Months Indicate General Business and Farm Prosperity

AUSTIN, TEXAS, Sept. 3—The last four months showed a steady increase in the number of new automobiles sold in Texas, as compared with the corresponding period of 1927. This condition is regarded as reflecting the general business and agricultural prosperity of the state, according to dealers. The records of the State Highway Department show that a total of 18,429 new cars were registered during July, 1928. This number, for any one month, was exceeded only by the total of 23,461 for October, 1924, which was the record year for new automobile sales in Texas. The total of 182,162 cars for that year is largely accounted for by the popularity at that time of low-priced cars.

The total of 18,429 cars for July, 1928, compares with the total of 11,644 for July, 1927, and the total of 17,391 for July, 1924.

The value of new automobiles registered during July this year exceeds the value for any previous month, not excepting the month of October, 1924. Likewise, the value of new cars bought in Texas this year will probably exceed that for any previous year, although the high mark in number may not reach that of 1924.

During the first seven months of 1928, a total of 87,292 new automobiles were registered, as compared with a total of 78,684 during the first seven months of 1927, and a total of 100,179 during the first seven months of 1924, the record year.

Ford First in Columbus

COLUMBUS, Sept. 3—After trailing many other makes of cars in sales for a year and a half, Ford came to the fore during August and a total of 308 Fords were reported sold in Franklin county during the month as compared with 22 in August, 1927. Chevrolet, which has been leading the field for a year and a half, held second place with 226 as compared with 256 in August, 1927. Third place went to Essex with 151 and fourth to the Oakland-Pontiac combination with 99.

Coulter Gets Ford Order

CHICAGO, Sept. 1—Galesburg Coulter-Disc Co. has received the largest order for clutch disks and brake housings in the company's history from Ford Motor Co., according to R. C. Ingersoll, president.

St. Louis Scraps First Car

ST. LOUIS, Sept. 3—The St. Louis Automobile Dealers' Salvage Co., was opened last week in the presence of officers and members of the dealers'

10,000 Passenger Cars in Milwaukee Not Worth Taxing, Says City Official

MILWAUKEE, Sept. 1—Announcement by Louis Arnold, tax commissioner of the City of Milwaukee, that his department has ignored 10,000 passenger cars from personal property tax assessment this year because their value was so low that it cost more than the revenue to collect the tax, has brought a statement from Francis A. Cannon, executive secretary of the Milwaukee Automotive Trades, Inc., that is of interest: "These cars constitute a serious highway hazard and a menace. Many accidents are caused by defective cars. In many instances these cars are in the hands of people

not financially responsible. Our association started a salvage yard, where it is now wrecking thousands of such defective cars and removing them from traffic. Parts in good condition are sold to the public; the rest is disposed of as junk. We have laws against fire hazards, to protect public health, promote industrial safety, etc., and yet we permit over 10,000 vehicles to run on the streets of Milwaukee which are a menace to life and limb. Wisconsin must come to the growing idea of refusing licenses to cars that are mechanically defective and not worth repairing.

association, who assembled to witness the dissection of the first "victim," a 1923 Ford roadster.

The first customer of the salvage yard was a man who bought a headlight lens salvaged from the Ford. "Bob" Lee, secretary of the dealers' association, had promised to offer his 10-year-old Ben Hur as the first victim of the yard, but backed down.

Timken Bearing Schedule 2,250,000 in September

CANTON, OHIO, Sept. 3—Production of close to 2,250,000 roller bearings for the automotive industry will be turned out by Timken Roller Bearing Co. during September. Production ran close to 2,000,000 in August.

September will see the largest shipment of bearings to the Ford Motor Co. since the start of manufacturing the new models, which is an indication that greater production is planned for the fall months. Chrysler and Dodge Bros. bearing orders are heavier for the month than at any time this year.

Outlook at the factories of the Timken company here is unusually encouraging and indications are that production will continue heavy until the first of the year, when requirements will be less, due to the new models which will make their appearance soon after the first of the year.

An expansion program at the Timken plant is keeping between 600 and 700 men busy 24 hours a day and several city blocks of new plant additions will have been completed this year. Additional workers will be needed within the next 30 days.

Shanghai Takes 743 Cars

WASHINGTON, Sept. 3—Seven hundred and forty-three automobiles were imported into Shanghai, China, during the first six months of 1928, according to advices received by the Department of Commerce. Of this number, the United States furnished 256, Great Britain 110, Canada 102, and France 67. Demand for low priced American cars continues strong.

Chevrolet Produces Millionth in 1928

DETROIT, Sept. 8—Further entrenching itself in its position as the world's foremost automobile producer, the Chevrolet Motor Co. this week reached a new milestone in its manufacturing history. With production and sales continuing at a record September clip, the millionth car of 1928 came off the assembly line at Flint Tuesday afternoon. Due to the high September production schedule necessary to meet an unusually heavy fall demand, no formal ceremonies marked the occasion, although W. S. Knudsen, president of the Chevrolet Motor Company; R. H. Grant, vice-president in charge of sales; C. F. Barth, vice-president in charge of manufacturing, and other Chevrolet officials were present.

After a brief informal ceremony the millionth car passed through the usual channels of distribution and was shipped a few hours after it came off the line to a dealer in the Middle West.

Detroit Employs 293,457

DETROIT, Sept. 3—Employment in Detroit reached a new all-time peak at 293,457 for the week ended Aug. 28, according to figures released by the Employers' Association of Detroit. Compared with the previous week, the increase is 5854 and compared with the corresponding week a year ago the increase is 87,832. The figures are compiled on the basis of two-thirds of the factory workers in the Detroit district.

United Alloy to Build

CANTON, OHIO, Sept. 3—It is reported here this week that the United Alloy Steel Corp. will soon begin work on an addition to its plant in the northeast section of the city to cost \$250,000.

It is said that a large contract has been received by the company for production of stainless steel, which is largely used in automotive manufacture and which would require enlargement of production capacity.

Steel Buyers Clear 3rd Quarter Tonnage

Operations of Mills Continue
on Steady Basis—Industry
Active Buyer

NEW YORK, Sept. 6—Many steel consumers are specifying against whatever tonnages are due them under third-quarter contracts. In doing this they are not so much prompted by the dead-line for third-quarter specifications which producers have set for next Monday, as by the fact that their own operating schedules make it quite convenient to furnish the mills with specifications and shipping orders at this time.

Conservative steel buyers entertain serious doubts that the higher steel prices which the mills have chalked up for fourth-quarter will become fully operative, basing this on their conviction that, whereas steel demand in some of the usually dull summer months exceeded all expectations of producers, it will, because of the earlier start, fall below what producers expect it to be during some of the fall months. They look upon fourth-quarter price advances and the attitude of mills toward third-quarter contracts not specified against by next Monday as gestures.

On the other hand, with a good backlog of orders for September operations on their books, mills can well afford to maintain a firm attitude until developments have made it clearer than is now the case. Whether the earlier start which steel demand had this year was at the expense of fourth-quarter buying or whether consumption has increased to such an extent that buying will be well sustained during the year's final quarter and the higher prices justified. Moreover, considerable disparity prevails in different steel products. Strip mills, encouraged by heavy automotive demand, are now striving to retrieve lost ground and to reestablish what formerly were looked upon as their regular prices.

Being in doubt as to what hot-rolled bars will cost them during the fourth-quarter, makers of cold-finished steel bars look upon the prevailing hand-to-mouth buying at 2.20 cents, Pittsburgh, as not without its redeeming features. Full-finished automobile sheets continue to occupy an exceptional position.

Not having undergone any price advance for fourth-quarter, as was the case with common sheets, the movement of full-finished body stock is on an even keel, with producers operating at a high rate. Automotive alloy steels also move into consumption in good tonnage.

Pig Iron—Demand for foundry iron continues good, and in some of the Western markets further price advances are spoken of. The Cleveland quotation for No. 2 foundry remains for the present at \$18 delivered. In Chicago there is talk of advancing the price to \$18.50.

Aluminum—Automotive demand for alu-

Chicago Opens New Air Ticket Office

CHICAGO, Sept. 3—Plans for a centralized Chicago ticket office, station and travel information bureau for airplane passengers, the first consolidation of this service in the United States, were announced yesterday by the Chicago Air Traffic Association. The station will be opened in the Palmer House Sept. 8. Buses will carry passengers from the depot to the municipal airport. Air schedules throughout the country and all ticket arrangements made enabling a passenger to purchase a ticket here for any destination in the country.

minum continues good, and prices remain unaltered. Secondary metal is in fair demand and the supply of scrap is plentiful.

Copper—It is freely conceded in the copper market that producers could easily advance prices, prospective demand being encouraging to such a move, but it is pointed out that even so slight an advance as $\frac{1}{4}$ cent to 15 cents would tend to stimulate production to a degree that might very speedily prove the undoing of the prevailing, well-ordered conditions.

Tin—August deliveries of tin in the United States amounted to 7200 tons, the largest tonnage in any one month this year, with the exception of March. Straits shipments last month broke all records, exceeding 9200 tons of which 5294 tons came to the United States. The market's tone is improved.

Lead—Information from London is to the effect that a conference of producers, participated in by Americans, will be held there this month. Better, but not too high world prices for the metal are said to be the objective. The market here is active and firm.

Zinc—The market appears to be stabilized on a 6.25 cent, East St. Louis basis.

North East Electric Votes to Buy Service Company

ROCHESTER, N. Y., Sept. 3—Stockholders of the North East Electric Co. voted last week to acquire all the common stock of North East Service, Inc., the distributing corporation for the company's products, and to issue 50,000 additional common shares to provide for the purchases on the basis of two shares of North East Electric common for one share of the service company stock. The action of the stockholders will increase the authorized common shares of North East Electric from 110,000 to 160,000.

The service company will continue to operate as a subsidiary of the parent concern. The company at present conducts its retail business through 1600 service stations located throughout the world.

G.M. Truck Offers Buick Engine Line

Chassis Range From $1\frac{1}{2}$ to 4
Tons—Prices Run \$1,395
to \$1,485

DETROIT, Sept. 3—General Motors Truck Co. has announced an improved and expanded line of trucks ranging in capacity from $1\frac{1}{2}$ to 4 tons, powered with Buick engines. The former one-ton Buick engined truck has been increased in capacity to $1\frac{1}{2}$ ton, the one-ton field being taken care of by the recently developed one-ton model with the Pontiac engine.

The various models are designated as follows: T-30, one and one-half tons, \$1,395 to \$1,485; T-42, two-ton, \$1,685 to \$1,760; T-60, three-ton, \$2,585 to \$2,900, and T-80, four-ton, \$2,765 to \$3,260. The T-30 and T-42 have engines with $3\frac{1}{2}$ by $4\frac{1}{2}$ in. bore and stroke; the T-60 and T-80 models have engines with $3\frac{5}{16}$ by $4\frac{5}{8}$ in. bore and stroke. Chassis features include a new type of double disk clutch with thick driving plates, four-speed transmissions, a propeller shaft parking brake with four-wheel internal Bendix service brakes, straight line propeller shaft drive, self-adjusting tie-rods, a combination spring and rubber engine mounting and fish belly type frames.

Larger Bodies Offered on Dodge Victory Line

DETROIT, Sept. 3—Longer and roomier bodies affording greater vision in all closed models of the Victory Six line have been announced by Dodge Bros. Corp. The new type bodies now in the hands of all dealers are available in the sedan, sport sedan, coupe and coupe-brougham. In designing the changes, engineers have retained the Victory Six roadability featured by its low center of gravity and sweeping, graceful appearance.

Mechanical changes of the improved Victory Six models include an engine temperature indicator on the dashboard, grouped under the glass panel with gas gage, oil pressure indicator, speedometer and ammeter, and the location of the starting button on the dashboard within easy reach of the driver.

Maximum vision for the driver and occupants of the front seat has been effected by an increase of 76 sq. in. in the area of the windshield. The height and length of the sedan models and coupe-brougham have been increased to the greatest head and leg room for all passengers.

Durant Sales Gain 27.9%

NEW YORK, Sept. 1—Durant Motors, Inc., reports an increase in retail sales in the first seven months of the year of 27.9 per cent, and an increase of 54 per cent in July over the same month last year.

Chemical Society to Hold Symposia

Advances in Petroleum and Rubber Chemistry to Fea- ture Annual Meeting

BOSTON, Sept. 3—With representatives of many universities, automobile and tire companies in this country, and some from Canada and Germany present, the 76th annual convention of the American Chemical Society at Swampscott, Mass., beginning Sept. 10 promises to be one of the most important ever conducted by that organization. The advances of science in petroleum and rubber will be discussed thoroughly by the delegates. There will be a national symposium on "Combustion" and another on "Rubber Chemistry" covering the week of the session.

The national symposium on "Combustion" will be held Sept. 11 and 12 under the joint auspices of the society's division of petroleum chemistry, of which J. Bennett Hill, chief chemist of the Atlantic Refining Co., is chairman. The gas and fuel chemistry division, headed by A. C. Fieldner, chief chemist of the United States Bureau of Mines, Pittsburgh, will participate in the session. Prof. George Granger Brown of the department of chemical engineering, University of Michigan, will preside.

"Flames" will be the theme of a paper by Stephen P. Burke, director of research, Combustion Utilities Corp. Prof. Henry J. Masson of New York University will speak on "General Detonation Theory from a Consideration of the Behavior of Fuels in the Engine and Auto-Ignition Temperature."

Dr. Graham Edgar, director of research of the Ethyl Gasoline Corp., and J. C. Pope of the same corporation will describe "The Mechanism of Combustion of Normal Octane."

J. M. Campbell, W. G. Lovell, and T. A. Boyd of the General Motors Corp., Detroit, will report on "The Importance of Mixture Ratio in Rating Fuels for Knock."

In addition to the joint symposium, the division of petroleum chemistry will hold sessions Sept. 12 and 13. "The Cracking of Vegetable Oils and Fish Oils for Motor Fuels and Other Products" will be the subject of a discussion by W. F. Faragher, J. C. Morrell and Gustav Egloff of Chicago.

The division of rubber chemistry, of which H. L. Fisher, research chemist of the United States Rubber Co., is chairman, will hold sessions Sept. 11, 12, 13 and 14. J. E. Partenheimer, Fisk Rubber Co., will submit the report of the committee on physical testing.

The report of the raw rubber specifications committee will be presented by E. B. Spear, chief chemist of the Thermatomic Carbon Co., Pittsburgh.

On Sept. 12 there will be a joint meeting of the Colloid Chemistry and Rubber Chemistry Divisions. Among those who will deliver addresses is Dr. Ernst A. Hauser, industrial chemist of Frankfurt, Germany, who will report on rubber structure research.

Prof. G. S. Whittby of McGill University, Montreal, will explain "The Structure of Rubber." Benton Dales, research chemist of the B. F. Goodrich Co., will also speak.

There will be other sessions of the rubber division at which many interesting

Army Planes Cost Billion Since 1899

WASHINGTON, Sept. 6—In the fiscal year 1909 to 1926 the Army received 15,422 airplanes from industrial plants and from 1911 to 1926 the Navy received 3398 planes, according to figures just made public by the Department of Commerce, aeronautics branch. More than \$1,000,000,000 has been spent on Army aeronautics since 1899, while more than \$350,000,000 has been spent on Naval aviation since 1912, when it started.

topics will be discussed. Speakers will include:

Marion C. Reed, research chemist, B. F. Goodrich Co.; Donald D. Wright, analytical chemist, Hood Rubber Co.; Fred S. Conover, investigator, Republic Rubber Co.; Harlan A. Depew, research chemist, the New Jersey Zinc Co.; B. W. Norlander, research chemist, General Electric Co.

Thomas Midgley, Jr., research chemist, Thomas and Hochwalt Laboratories, Dayton, Ohio; L. B. Seabell, research chemist, Goodyear Tire & Rubber Co.; E. R. Bridgwater, assistant sales manager, rubber chemicals, E. I. du Pont de Nemours & Co., are included on the program.

Mexican Road Congress to Aid Highway Growth

WASHINGTON, Sept. 3—Delegations of road builders from all sections of the United States will leave this country about Oct. 1 to attend the National Road Congress of Mexico. The American Road Builders' Association said the road congress in Mexico would be of extreme importance to highway transportation development between Mexico and the United States.

The road congress will convene on Oct. 3. In attendance will be road building officials from virtually every country on the American continent. The meeting will be marked by one of the largest expositions of road building machinery and equipment ever assembled in a Latin-American nation.

The general purpose of the congress is to bring to light economical methods of financing and constructing modern highways in Mexico and Latin-America, the American Road Builders' Association said. The delegates will receive the cooperation of road builders from this country in every possible way.

New Zealand Outlook Good

WASHINGTON, Sept. 6—While motor car sales are unusually slow in New Zealand due to lack of stocks, there is a strong market in used cars, according to a cablegram to the Department of Commerce from Wellington. The new season starting this month is expected to be one of the best in the history of the country.

World Tire Exports Decline 17 Per Cent

United States Holds Lead as Chief Exporter With 32% of Total

WASHINGTON, Sept. 6—A world survey of exports of automobile tire casings shows a decrease of 17 per cent in volume during the first six months of 1928 as compared with the same period of 1927 or a drop of from 4,862,840 units in 1927 to an estimated 4,050,581 units in 1928, the Department of Commerce is advised.

In making public the results of its survey, however, the department announced that the United States still led the world in exports of casings, having shipped 1,313,354 in the first half of 1928, amounting to 32 per cent of the total trade of the important exporting countries. France, which was the leader in these exports until 1927, maintained second place, supplying 21 per cent, or 856,700 casings, with Canada third, shipping 20 per cent or 812,412.

July Rubber Exports

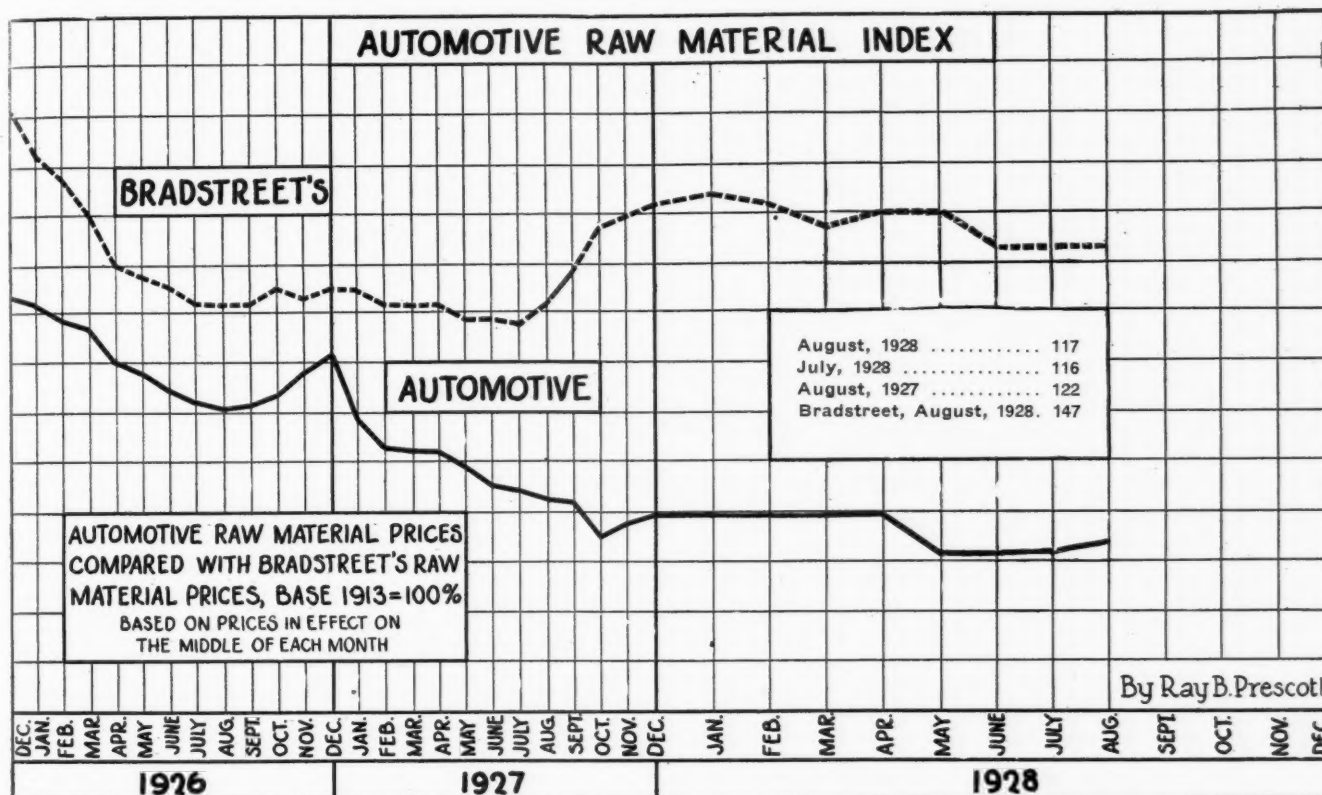
WASHINGTON, Sept. 6—July exports of automotive rubber goods declined 6 per cent in value as compared with June, dropping from \$3,418,954 to \$3,226,195. A decrease in shipments of automobile casings, which account for 80 per cent of this group, is directly responsible. Solid tires for automobiles increased in value by 16 per cent while exports of solid tires for other vehicles advanced by 19 per cent. A feature was the swinging of the trade toward the Pacific for the first time this year—Japan, Hawaii, the Philippines and British India all being among the principal markets for automobile casings.

A total of 227,325 casings, valued at \$2,760,548, were shipped in June and 212,861, valued at \$2,698,323, in July. Japan was the leading market during July, taking 7 per cent of the total value of all automotive rubber goods; Hawaii was second with 6 per cent of the total and Spain took 5 per cent. Japan, which has been averaging 8382 casings a month during the other months of this year, took 15,345 in July.

Rubber Trading Quiet

NEW YORK, Sept. 4—Trading in crude rubber has been comparatively quiet, according to F. R. Henderson Corp., which attributes this inactivity to the holiday atmosphere. This company calls attention to a Reuters' cable which states that it is reliably estimated that there will be about 65,000 tons of rubber available for export from Malaya on Nov. 1, which figure is lower than earlier estimates. Arrivals of crude rubber at all ports of the United States during August are estimated at 30,000 tons.

Raw Material Index Advances One Point



Safety Council to Hold Automotive Meetings

NEW YORK, Sept. 3—Meetings of the automotive section of the National Safety Council will be held Oct. 2, 3 and 4 during the seventeenth annual Safety Congress in New York City. All of the sessions of this group will take place in the McAlpin Hotel. At the gathering on Oct. 2, features will be an address by Phillip J. Bowen, of the Michigan Steel Corp., on "The Foreman and Safety." E. H. Cotcher, superintendent of safety, the Murray Corp. of America, will tell about "Safety Through Contests." Election of officers of the automotive section will be held Oct. 3, after which there will be a discussion of "Making Lacquer Finishes," by E. G. Richardson, Berry Brothers; H. L. Miner, E. I. du Pont de Nemours & Co., and R. E. Abbott, of the Fisher Body Corp.

Uniform motor vehicle laws will be the subject at a special session. Robbins B. Stoeckel, commissioner of motor vehicles, Hartford, Conn., will serve as chairman at this special gathering at the Waldorf-Astoria, Oct. 3. "The Model Traffic Ordinance" will be discussed by A. C. Godward, city planning engineer, Minneapolis.

FWD Sales Increase

CLINTONVILLE, WIS., Sept. 3—FWD truck business for the first seven months of 1928 increased 24 per cent over the same period last year, according to a statement by the Four Wheel

Drive Auto Co. FWD sales in 1927 increased 45.5 per cent over the sales in 1926. The new fast six-cylinder models recently developed by the FWD company are in great demand and have opened up a market in over 105 distinct vocations for this type of truck.

Dealers to Get Awards in N.A.C.C. Car Contest

NEW YORK, Sept. 5—Special awards for dealers in the old car contest, which the National Automobile Chamber of Commerce is sponsoring in connection with the national automobile show, were announced today. These prizes, which comprise \$250 each for the oldest motor vehicle and for the oldest motor vehicle having the elements of modern automobile design, are offered to dealers in addition to awards to the general public.

In determining what constitutes a modern type of design, the judges will allot 40 points for the age of the vehicle and the remainder for original equipment and design, such as body style, steering wheels, radiator, suspension, demountable wheels, demountable rims, windshield, location of powerplant and other items.

To Sell Schwartz Plant

READING, PA., Sept. 5—The plant of the Schwartz Motor Truck Corp., this city, will be sold at receiver's sale Sept. 29. Buildings are 90 ft. by 440 ft. and 30 ft. by 60 ft. and there are nine acres of land.

Gardner to Form Company to Manufacture Aircraft

ST. LOUIS, Sept. 6—Gardner Motor Co., Inc., is planning the organization of a \$2,000,000 aircraft company to manufacture a popular priced monoplane, it was learned today with the announcement from Wichita, Kan., that Amos A. Payne, chief engineer for the Swallow Airplane Co., has resigned to become technical executive of the new Gardner company. Officers of the Gardner company said formal announcement of the new company will be made later, following a meeting in St. Louis.

Manville Plans Expansion

NEW YORK, Sept. 5—Stockholders of Johns-Manville Corp. have approved an increase in the authorized common shares from 750,000 to 1,000,000. Proceeds from the sale of the new stock will be used to acquire other businesses, extending the present organization and provide a distribution fund for employees.

Sales Gain in Cleveland

CLEVELAND, Sept. 6—New cars sold in Cleveland in August totaled 4171 as compared with 2955 in August last year, according to figures compiled by the Cleveland Automobile Manufacturers & Dealers Association. Used car sales increased from 10,742 in August last year to 12,408 in the month just closed.

Dallas to Include Bus and Plane Show

DALLAS, TEXAS, Sept. 3—The annual show of the Dallas Automotive Trades Association, Oct. 6-21 inclusive, will be a complete display of motor transportation, the first exhibition of the kind in the history of the Southwest. This year's show will embrace two entirely new features—buses and airplanes.

The committee on arrangements for the show announces some 10,000 sq. ft. of space will be devoted to a display of buses and bus equipment. The bus division of the show will be under the auspices of the Texas Bus Owners Association, of which Guy Shields of Austin is president.

The airplane division of the show will be in charge of National Air Transport, Inc., and the Texas Air Transport, Inc. It is announced a dozen airplane manufacturers will have exhibits.

Another feature of the show will be a complete exhibition by automotive jobbers of Dallas. Shop equipment will be shown in actual operation. Power operated machines will be manned by expert mechanics who will perform actual operations on automobiles. A complete line of accessories will also be displayed.

Sales in Belgium Increase

WASHINGTON, Sept. 3—A cablegram from Brussels advises the Department of Commerce that the demand for automobiles in Belgium is favorable despite the vacation period and American sales for the first six months of 1928 exceed total American sales for the entire year of 1927.

Coming Feature Issues of Chilton Class Journal Publications

Oct. 10—Marketing Annual for 1929—Motor World Wholesale.

Nov. 17—Production and Factory Equipment Issue—Automotive Industries.

Crowe Installs Presses to Make Metal Parts

CHICAGO, Sept. 3—The Crowe Name Plate & Mfg. Co. has completed the installation of power presses and drop hammers ranging up to 1000-ton capacity as well as a battery of smaller presses and is now prepared for quantity production of coined metal parts and embossings for automobiles, it was announced today by Winslow Goodwin, sales manager. Parts to be manufactured will include instrument panels, dome lights, door handle trimmings, robe rail catches and other items, which will be shipped plated and finished, ready for use.

G.M. of Canada Picnics

OSHAWA, Sept. 3—General Motors of Canada, Ltd., gave its annual outing this month with an attendance of 20,000 to 30,000. A baseball game between teams captained by R. S. McLaughlin, president, and Norman McLean, was the feature. H. A. Brown, vice-president and general manager, caught the slants of Mr. McLaughlin.

Stutz Car Twelfth in British Feature

LONDON, Aug. 24 (by mail)—Cars of seven nationalities were included in the 56 entries and 44 starters in the British "Tourist Trophy" race held on 13-2/3 miles road circuit near Belfast (Ireland) Aug. 18. The race was confined to standard models of which specifications had appeared in catalogues printed and published on or before Feb. 29 last, the date on which the regulations were issued. So long as no fundamental feature (such as valve position, bore and stroke, type of ignition, etc.) was varied, the rules permitted alterations that were considered conducive to increased speed. Superchargers were allowed if they were included or offered in the catalogue specification, but not otherwise.

The winner was a supercharged Lea-Francis with a four-cylinder 1½ litre engine driven by Kaye Don, one of the best known among British racing drivers. A supercharged front-drive Alvis was second, crossing the finishing line only 13 seconds after the winner, whose average speed was 64.06 m.p.h.

The race was a handicap, with from one to five laps credited to the starters in the smaller classes. Among the scratch cars were two Stutz, one of which started and finished twelfth at 62.39 m.p.h.

Captain Malcolm Campbell and Viscount Curzon competed, driving 2¼ litre eight-cylinder Bugattis; but both suffered petrol tank leakage and had to retire, Campbell's car bursting into flames and being completely burned out at the end of the second lap.

Calendar of Coming Events

SHOWS

Aeronautical Exposition, Coliseum, ChicagoDec. 1-9
American Electric Railway Ass'n, Public Auditorium, Cleveland.....Sept. 22-28
American Road Builders Association, Inc., Cleveland Auditorium.....Jan. 14-18
American Society for Steel Treating, Commercial Museum, PhiladelphiaOct. 8-12
American Welding Society, Commercial Museum, PhiladelphiaOct. 8-12
Automotive Equipment Association, Coliseum, ChicagoOct. 22-27
BerlinNov. 8-18
Boston, Mass., Mechanics Bldg.....March 2-9
BrusselsDec. 8-19
Buenos AiresNov. 29-Dec. 9
*Chicago, National, Coliseum, Jan. 26-Feb. 2
International Aviation Exposition, BerlinOct. 8-28
London, passenger carsOct. 11-20
MontevideoNov. 10-19
National Air Races, Los Angeles.....Sept. 11-12
National Standard Parts Association, Cleveland Auditorium.....Oct. 29-Nov. 3
*New York, National, Grand Central PalaceJan. 5-12
Paris, passenger carsOct. 4-14
Paris, trucksNov. 15-25
Salon, Automobile Salon, Inc., Hotel Drake, ChicagoJan. 26-Feb. 2
Salon, Automobile Salon, Inc., Hotel Biltmore, Los AngelesFeb. 9-16
Salon, Los Angeles Motor Car Dealers Association, Biltmore Hotel.....Oct. 17-20
Salon, Automobile Salon, Inc., Hotel Commodore, New YorkDec. 2-8
Salon, Automobile Salon, Inc., Palace Hotel, San Francisco.....Feb. 23-Mar. 2

* Will have special shop equipment exhibit.

Western States Metal and Machinery Exposition, Los Angeles.....Jan. 14-18

CONVENTIONS

American Electric Railway Ass'n, Public Auditorium, Cleveland.....Sept. 22-28
American Gear Manufacturers Ass'n, Statler Hotel, Buffalo, N. Y.....Oct. 11-13
American Institute of Mining and Metallurgical Engineering, Metals Division, Benjamin Franklin, PhiladelphiaOct. 8-12
American Manganese Production Association, Mayflower Hotel, WashingtonSept. 10-11
American Road Builders Ass'n, Inc., Cleveland AuditoriumJan. 14-18
American Society for Steel Treating, Commercial Museum, PhiladelphiaOct. 8-12
American Society for Steel Treating, Semi-Annual Meeting, Los AngelesJan. 14-18
American Welding Society, Commercial Museum, PhiladelphiaOct. 8-12
Automotive Equipment Association, Coliseum, ChicagoOct. 22-27
International Air Conference, WashingtonDec. 12-14
Machine Tool Congress, joint meeting with Machine Shop Practice Division, American Society of Mechanical Engineers, Cincinnati.....Sept. 24-27
Mid-West Motor Truck Transportation Congress, Indianapolis.....Oct. 23-26
Motor & Accessory Manufacturers Association, Credit Managers Conference, Hotel Statler, Buffalo.....Sept. 12-14
National Battery Manufacturers' Association, Ambassador Hotel, Atlantic CitySept. 20-21
National Highway Congress, Mexico CityOct. 3-6

National Metal Congress, Los AngelesJan. 14-18
National Research Council, WashingtonDec. 13-14
National Safety Council, National Congress, New YorkOct. 1-5
National Standard Parts Association, Hollenden Hotel, Cleveland, Oct. 29-Nov. 3
Ohio Council, National Automobile Dealers Association, Hotel Gibson, CincinnatiSept. 13-14
Society of Industrial Engineers, Rochester, N. Y.....Oct. 17-19
World Motor Transport Congress, RomeSept. 25-29

A. S. M. E.

Cincinnati, Oct. 22-25—Machine Shop Practice.
Cleveland, Sept. 17-20—Fuels.

S. A. E.

National

Chicago, Dec. 6-7—Aeronautic.
Detroit, Book-Cadillac, Nov. 22-23—Production.
Detroit, Book-Cadillac, Jan. 15-18—Annual.
Los Angeles, Sept. 11-12—Aeronautic.
Newark, Robert Treat Hotel, Oct. 17-19—Transportation.
New York, Hotel Astor, Jan. 10—Annual Dinner.

Sectional

Cleveland, Sept. 29—Outing.
Milwaukee, Sept. 12—Frolic and Dinner.
Washington, Sept. 13—Brakes.

RACES

Great BritainSept. 22
SalemOct. 12